

Dwg #7 — FILLET

T.E. Lab 347/547 - Computer Assisted Design and Drafting

INTRODUCTION:

This drawing involves the use of the circle, array, fillet, and trim commands and the creation of layers. The circle command will be used to create circles of different diameters and/or radii and on different layers using various line types. The array command will be used to position objects in either a counter-clockwise or clockwise direction at varying angles. The trim command will be used to selectively trim multiple sections from an object.

OBJECTIVES:

Following the completion of this activity, the learner will be able to:

1. Position objects using the polar coordinate system.
2. Create circles of the specified sizes using the Circle tool.
3. Create fillets of the specified size using the Fillet tool.
4. Remove the unnecessary lines using the Trim tool.
5. Revolve objects around another object using the Array tool.
6. Lengthen the non-quadrant bolt hole center marks using the Lengthen command in the Modify menu.

DIRECTIONS:

Read the specific information regarding this drawing. Attached to this tutorial is the drawing that you are to reproduce. Open a new drawing and save it to your storage media using the initials of your; last name, first name, and middle name, followed by -Dwg07 (i.e.; LFM-Dwg07).

Note: The file extension (.dwg) will be automatically appended to the file name (i.e.; LFM-Dwg07.dwg).

Set up the CADD program as indicated below, before starting the drawing on the Model tab. After drawing #7 is complete, save it to your storage media, answer the questions about the drawing in the question section of this tutorial, and complete the Drawing #7 section of the Drawings #6-#10 Evaluation sheet.

When due, submit drawings #6-#10 with a title page, hard copy of the drawings on A-size paper (in numeric order), and the Drawings #6-#10 Evaluation sheet (7 sheets) stapled together with your storage media containing the finished drawing files.

Note: Drawings #6-#10 should be printed using A-size paper.

AutoCAD SETUP:

1. Choose Format►Drawing Limits, in the command line specify lower left corner = 0.0000, 0.0000, and specify upper right corner = 12.0000,9.0000.
2. Choose Format►Text Style..., set Style Name = Standard, set Font; Height = 0.2000.
3. Choose Format►Dimension Style..., click the Modify...button:
 - A. Click the Lines and Arrows tab, under Arrowheads, set Arrow size: 0.1800, and under Marks for Circles, set Size = 0.0900.

Note: Type = Line (when placing marks in center of circles).

Type = None (when placing dimensions).

- B. Click the Text tab, under Text Appearance, set Text Style: Standard, and Text Height: 0.20.
- C. Click the Fit tab, set Fit Options = Either the text or the arrows, whichever fits best.
- D. Click the Primary Units tab, under Linear Dimensions, set Unit format = Decimal, set Precision = 0.00, under Angular Dimensions, set Units format = Decimal Degrees, set Precision = 0.

4. Select the Layers tool in the Object Properties toolbar and create a Dimension layer and/or Center layer i,f necessary:
 - A. Right-click in the Layers window and choose the New button; change name Layer 1 = Dimension, set Color = Blue, and set Linetype = Continuous.
 - B. Right-click in the Layers window and choose the New button; change name Layer 1 = Center, set Color = Red, and set Linetype = Center2.
5. Draw the Ø3.00, R4.00, Ø circles at X = 5.00 and Y = 5.00.
6. Draw the Ø0.75, and R0.75 circles at the upper quadrant of the Ø4.50 bolt circle.
7. Place all center lines on the Center layer.
8. Place the center mark in the upper 0.75 bolt hole using the Center Mark tool and remove the horizontal lines prior to arraying the bolt holes.
9. Draw the two fillets between the R0.75 circle and the R2.00 circle.
10. Trim the R2.00 circle from between the fillets.
11. Array the bolt hole, its vertical center mark, its shoulder, and the fillets.
12. After arraying and trimming the bolt holes, convert the resulting 7 objects into polylines using the boundary command (BO is a shortcut), and set their line width = 0.02.
13. Place the center mark in the 4.00 circle prior to dimensioning the drawing, then set Center Mark to none.
14. Lengthen the non-quadrant bolt hole center marks to the center of the 3.00 hole using either the Lengthen tool or the Extend tool.
15. Place all dimensions on the Dimension layer.

QUESTIONS:

Measure the areas of the inner circle, outer circle, and one bolt hole by selecting the Area command and typing o for Objects, then click on the desired circle. The area and perimeter will be displayed in the command line.

Measure the area of the outer circle with all holes removed by selecting the Area command, type a for Add, then type o for Objects and click on the outer circle. Next type s for Subtract, then type o for Objects and click all other circles - the final area will be displayed in the command line.

Question 1: Measure area of inner circle

(Precision, 4 decimal places)

Question 2: Measure area of entire object

(Precision, 4 decimal places)

Question 3: Measure area of 1 bolt hole

(Precision, 4 decimal places)

Question 4: Measure area of entire object with the inner circle and all bolt

holes removed (Precision, 4 decimal places)

