Isometric Dimensions

Isometric dimensions are parallel to and align with a corresponding plane. See Figure 21A-1. AutoCAD does not provide tools that automate the process of creating true isometric dimensions. You can use a combination of dimension tools to align extension lines and the dimension text with an isometric plane. However, the resulting arrowheads are not in an isometric format.

To create true isometric dimensions, draw extension and dimension lines as lines, the dimension value as mtext or text, and closed arrowheads as filled shapes. Another option is to dimension without arrowheads and then add isometric arrowheads as separate objects. A third option is to construct custom isometric arrowheads to assign to specific dimension styles.

Figure 21A-1. An example of an isometric part drawing with isometric dimensions. Note the text and arrowhead orientation in relation to the extension lines.
Using Dimension Tools

Using dimension tools to construct isometric dimensions is usually faster than creating isometric dimensions as separate objects. However, arrowheads do not display an isometric format unless you construct custom isometric arrowheads to assign to dimension styles. You can create isometric text styles and dimension styles for each isometric plane. However, you may find it easier to use standard text and dimension styles, and edit each dimension as necessary to create isometric dimensions.

Add dimensions using the `DIMALIGNED` tool. See Figure 21A-2A. You can use the `DIMALIGNED` or `DIMLINEAR` tool to dimension vertically aligned points, but you must use the `DIMALIGNED` tool for all other applications. Then use the Oblique option of the `DIMEDIT` tool to align the extension lines with the isometric plane. Pick the dimension to edit and specify the isometric angle. Enter a specific value, such as 30 or 210, or pick two points. See Figure 21A-2B.

Rotate the dimension text to align with the isometric plane. See Figure 21A-2C. Use the Rotate option of the `DIMEDIT` tool or the Angle option of the `DIMTEDIT` tool. Finally, edit the dimension text to specify an obliquing angle according to the isometric plane. See Figure 21A-2D. If you did not prepare separate isometric text and dimension styles, edit the obliquing angle using the `DDEDIT` tool and the Oblique Angle text box in the Formatting panel of the Text Editor ribbon.

**NOTE**

If you plan to add isometric arrowheads as separate objects, assign the None option to each drop-down list in the Arrowheads area in the Symbols and Arrows tab of the New (or Modify) Dimension Style dialog box. However, without arrowheads, the fit between close extension lines will not respond correctly. The dimension value and short dimension lines appear inside extension lines, without room for arrowheads.
**Figure 21A-2.** The steps required to create isometric-looking dimensions using dimension tools. A—Use the **DIMALIGNED** tool to dimension features. B—Use the **Oblique** option of the **DIMEDIT** tool to edit the obliquing angle of extension lines. Be sure to specify the correct isometric angle. C—Use the **Rotate** option of the **DIMEDIT** tool or the **Angle** option of the **DIMTEDIT** tool to rotate the dimension text. D—Use the **DIMEDIT** tool to edit the obliquing angle of dimension text.

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**Isometric Arrowheads**

True isometric dimensions require isometric arrowheads. See **Figure 21A-3.** To create an isometric arrowhead, use geometric construction and a tool such as **PLINE** to draw the outline of arrowhead. Use the same dimensions as a standard arrowhead, such as a 3:1 ratio and .125” (3mm) length. The wide portion of the arrowhead is parallel to the extension line. See **Figure 21A-4A.**
Use the **HATCH** or **SOLID** tool to create filled arrowheads. Chapter 23 explains using the **HATCH** tool, which is often the best method to apply a solid fill. To create filled arrowheads using the **SOLID** tool, access the tool and pick three points, or corners, in a clockwise or counterclockwise order. Then right-click twice or press [Enter] or the space bar twice to create the fill and exit the tool. See **Figure 21A-4B**.
Figure 21A-4. A—Constructing the outline of isometric arrowheads. The wide portion of the arrowhead and the arrowhead length are the same as those of nonisometric arrowheads, but the wide portion of the arrowhead is parallel to the extension line. B—Filled arrowheads.

NOTE
Save each arrowhead as a block for repeated use, and to group the outline with the fill. Blocks are described in Chapter 24.

Activity 21A-1
1. Start a new drawing from scratch or use a template of your choice.
2. Draw the part shown in Figure 21A-2.
3. Use an appropriate text and dimension style to dimension the part as shown in Figure 21A-2D.
4. Save the drawing as ACT21A-1.