Curved Surfaces in Isometric Sketches

Chapter 2 of the Text
Objectives

- Create curved features in isometric sketching
- Create holes and determine visibility of backs of holes
Circles and Ellipses

• Recall that in isometric sketches squares and rectangles become parallelograms.

• Similarly, in isometric sketches circles become ellipses.
Circles

• Before drawing circles on 3D sketches, let’s review drawing circles in 2D.

• Start by drawing a bounding box.

• Draw a tic mark at the midpoint of each line.

• Connect the tic marks with arcs.

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Curved Surfaces

• In isometric perspective, we see circular features as ellipses.
• Fortunately, sketching an ellipse is very similar to sketching a circle.
  • Start by drawing a bounding box.
  • Draw tic marks at the midpoints.
  • Sketch in the two long arcs followed by the two short arcs.
Curved Surfaces in Isometric Sketches

- The most common occurrence of curves in isometric sketches are holes.
- Some holes go all the way through an object – ‘through hole’
- Others only go part of the way through an object – ‘blind hole’
Circular Holes in Isometric Sketches

- For objects that are relatively thin, it is common to see the bottom of a hole in an isometric sketch.

- To determine if the back of the hole is visible, lightly sketch the bounding box for the back circle. If part of the box lies within the front circle, darken that part of the arc.

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Detailed Circle Sketching—(Circles & Ellipses!)

1. Draw a square whose sides are the diameter of the circle.

2. At the center of each side define the point of tangency for the circle.

3. Draw the diagonals of the square.

4. Orient the paper so you can draw equal arcs to construct the circle.

Note ~¾ placement.
Detailed Ellipse Sketching (show this slide sequence rapidly)

- Diagonals of Parallelogram
- Vertical & Horizontal Tangency Points
- ~¾ Points – the trick!
- Arc
- Arc
- Arc
- Arc
- Arc
- Arc
- Arc
- Arc
- Arc
- Arc
- Arc

For a more detailed description of this process see "Hand Drawing an Ellipse" slides on the EEIC website. Click Here to show slides described above.
Curved Surfaces in Isometric Sketches

• Use this time to practice viewing and sketching objects with curved surfaces.

• In class assignment (GP-07)

• If you have difficulty with GP-08, you might try lightly sketching the cubes and then adding the curved surfaces and tangent lines as needed and finally delete the extra lines.( see following slide)
Example