TUTORIAL 8

Skeletal Modeling

Learning Objectives

After completing this tutorial, you will be able to:

- Use the new 3D Modeling tools in AutoCAD 2007.

Required Competencies

Before starting this tutorial, you should have been able to:

- Use AutoCAD at an intermediate to advanced level
- Use Direct Distance Entry
- Create Regions
- Sweep Profiles

The new 3D modeling tools in AutoCAD 2007 allow you to sweep region profiles realigning perpendicular to any path. This tutorial assumes that the user is completely familiar with creating precise 2D sketches of arcs, lines, polylines, and splines in any location as well as the 3D tools from previous releases.
1. With direct distance entry and the new ability in AutoCAD 2007 to track along the z-axis you can very quickly construct a wireframe skeleton for a tubular machine frame.

![Figure 1](image1)

2. I have created a region of the profile of the tube size I want to use. For this tutorial I will use only the center point of the region for placement, but perhaps some clever person can figure out a way to reliably select any of the points to “justify” position any particular frame member.

![Figure 2](image2)
3. Make the Frame Tubes layer the active layer. Select Sweep and then select the profile and press the spacebar. Then select one of the skeleton wires and press the spacebar.

![Figure 3](image)

4. Press the spacebar again to repeat the command for each wire. Do it for all frame members and that simply we are done.

![Figure 4](image)
Add the details like mounting holes and pads. If you have an angled brace you could use planar surface to slice the miters. With some clever Boolean subtractions or with Slice you should be able to get some interesting coped ends. You might want to build up a library of end treatment tools for this.