## Helical Path.

The following GUI method was developed for a helical path of 0.6mm pitch, and a 3mm diameter, growing in the Y direction. By changing the keypoints to the appropriate figures it could be also be used for any diameter, pitch or direction.

1. Create 3 keypoints.
    1. The first keypoint is (X, 0) (Y, 0) (Z, 0).
    2. The second keypoint is (X, 0.3) (Y, 0) (Z, 3.0).
    3. The third keypoint is (X, 0.6) (Y, 0) (Z, 0).

[ 0.3 = Half the pitch (mm), 3 = Diameter (mm), 0.6 = Pitch (mm) ]

2. Create a line between the first and second keypoints, and the second and third keypoints.
3. Display the workplane and align it with the first line, with a ratio of 0.5.
4. Offset the workplane 90° in the X direction.
5. Divide the first line into two lines.
6. Check the keypoint distance between the first keypoint and the centre of the first line. (Make a note of this distance).
7. Create a circular area by dimensions using the distance noted from 6 above as the radius of the circle.
8. Repeat 3-7 for the second line (see Figure 1)

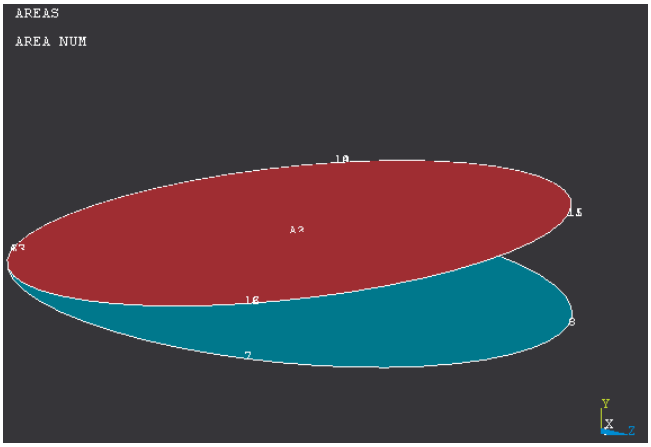


Figure 1 Helix construction areas

9. Delete the areas only, and the original construction lines and associated keypoints.
10. Copy the left two lines of the bottom circle, and the right two lines of the top circle 5mm in the positive X direction.
11. Delete the original left two lines of the bottom circle, and the right two lines of the top circle. This leaves a left and right hand helix. See Figure 2

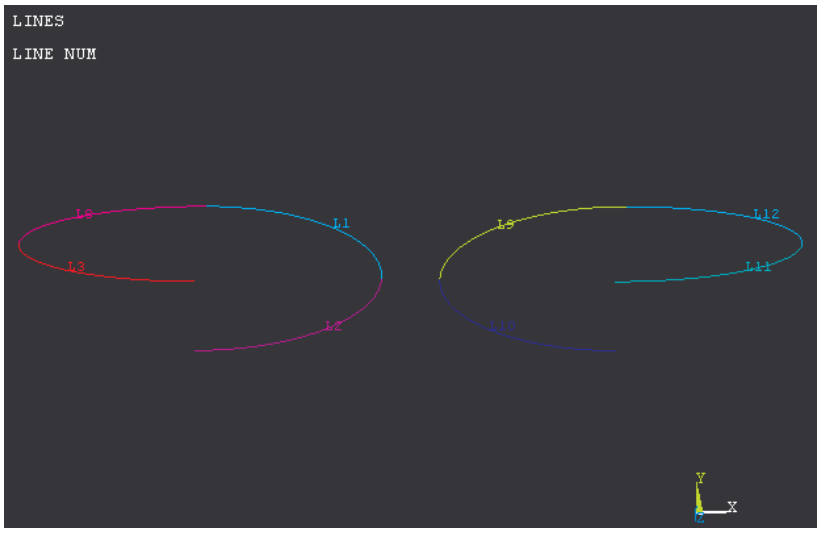


Figure 2 Left and right hand helix.

12. Add the lines together for each helix
13. Copy the lines in the Y direction 0.6mm, ten times. See Figure 3
14. Merge all the keypoints.

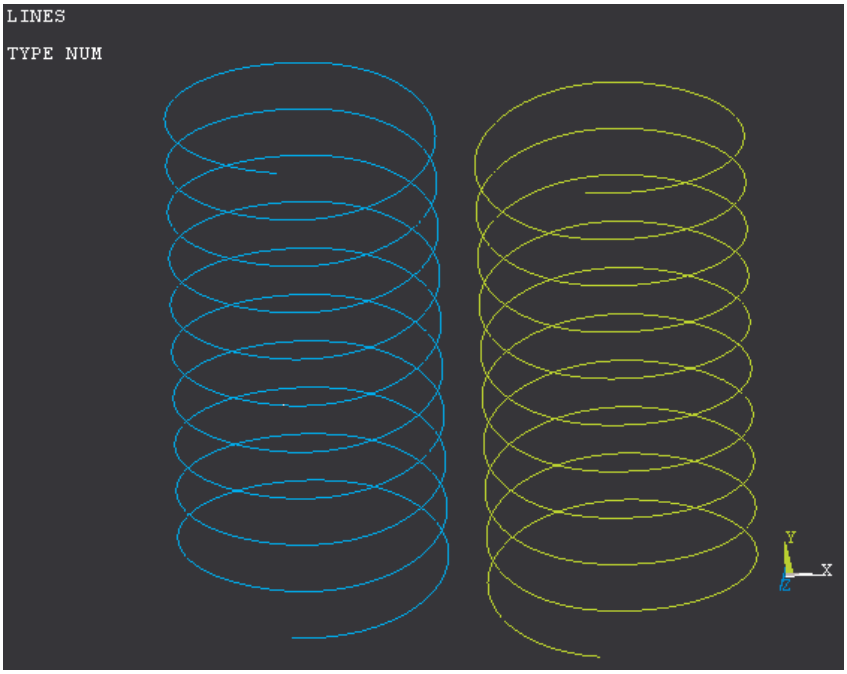


Figure 3. Left and right hand helix with ten revolutions.