tions with a half to one revolving drill, and it would take 6 revolutions for every thread in the piece, there being 3/8 of thread in the piece at 24 pitch(.375 x 24 = 9)Threads would mean there would be 9 full threads in the piece and 3 extra revolutions for lead for a total of 12 threading revolutions. Therefore, we would need the minimum of 72 revolutions in the working portion of the cam which would be from "0" to "50".

Further looking at the part, we find the counterbore in the front would need .125 plus .104 for the drill point for a total of .229 feed. We can feed this drill .005 per revolution so 46 revolutions would be needed. The next two drill positions would have to drill the remainder which is .588 divided by 2 (2nd and 3rd position drills) equals .294 plus .010 for pressure and approach equals .304. With a feed of .0035 we need 87 revolutions. Since the tool spindles rotate 30 revolutions (approximately 1/2 the revolutions of the work spindles) in the opposite direction, the work spindles would have 57 effective revoluctions. 30 revoluctions plus 57 effective revolutions equals 87 revolutions. This completes the end working operations.

The forming can be done in the first and second position. We will be forming from .562 stock diameter to .296 diameter. The .296 diameter is obtained by using the .310 finished diameter minus .005 chamfer on piece minus .002 past into the cutoff. This would then be .005 plus .002 equals .007 x 2 both sides diameter equals .014. .310 minus .014 equals .296. Now .562 minus .296 equals .266, this divided by 2 (first and second position form) equals .133. Since .133 equals the diameter it is divided by 2 to find the rise needed on the cam, .0665 is the amount of rise needed. A feed of .0025 can be used for a total of 27 revolutions. Next to figure the cutoff .300 diameter plus .010 (.005 past center) equals .310. This divided by 2 equals .155 divide by .0025 feed per revolution equals 62 revolutions needed. The hole in the part goes into the cutoff, but not into the next part. This allows the part to be cut off at approximately 22 hundredths. The hole in the part is .150 diameter. This from the .300 outside diameter leaves .150 (double wall thickness). This dimension divided by 2 actual wall thickness one side .075. Using a standard 5/32 form and cutoff can (5-C-11) the rise is from 0-45. 5/32 divided by 45 hundredths equals .0035 per hundredth, .0035 divided into the .075 wall thickness gives us 21.4 hundredths (round this off to 22 hundredths). Using this standard cam the piece is now cutoff, and remainder of the cam rise continues to clean off the bar end.

It will take approximately 28 hundredths after part has been cutoff to drop back, have countersink arm swing down and countersink. After all these calculations, the threading is found to be the longest operation with 72 revolutions from 0-50.

To find cycle time take 1810 R.P.M. divide this by 60 seconds. This equals 30.167 revolutions per second. 30.167 divided into 72 equals 2.386. Round this off to 2.4 and add .4 for index time giving a total time of 2.8 per piece.