



Standards: AGMA 908-B89 and ANSI/AGMA 2001-D04

The AGMA 908-B89 standard uses an algorithm for determining the critical point of maximum bending stress located at the intersection of the Lewis parabola and the gear tooth fillet. Since GearTrax knows the shape of the fillet this method is bypassed and the parabola is determined by the points of this shape. It is further refined by a factor of 20 using linear interpolation method between the 2 closest points. This method provides an extremely accurate parabola that is almost perfectly tangent to the gear tooth fillet.

The AGMA 908-B89 standard uses the cutter tip radius as the minimum radius of curvature. GearTrax can also use this value or can calculate the actual minimum radius of the fillet (default). If the gear is to be manufactured using a gear machine then it might be advisable to use the cutter tip radius option.

In some rare cases the alternative sizing method should be used. One such case might be a gear with a large number of teeth, positive addendum modification and a small fillet radius. Always visually inspect the parabola graphics. If it doesn't look tangent to the fillet or is high up on the tooth form then click on the alternative sizing method.

GearTrax has an option to use the minimum tooth thickness for the sizing calculations.

GearTrax uses the rack method to generate the root fillet trochoid.

GearTrax does not consider any crowning that might be used which would reduce the tooth thickness.

Sample accuracy:

The default 10dp pinion in GearTrax has a $hF = 0.1767\text{in}$ and $sF = 0.1761\text{in}$. Analysis of the pinion model created in SolidWorks has a $hF = 0.1767\text{in}$ and $sF = 0.1763\text{in}$. There is no difference in the hF and 0.0002in in the sF (critical thickness). That is accurate to 1/10 of 1 percent.

For those who would like a better understanding of the standards used it is highly recommend that you purchase the standards if you do not already process them. They can be obtained from the ANSI Webstore: <http://webstore.ansi.org/>