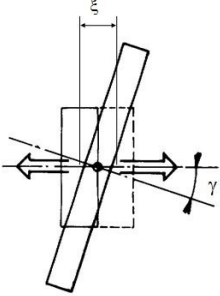
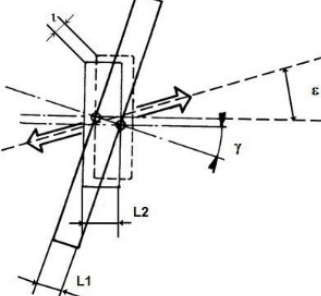
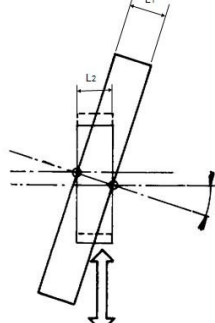
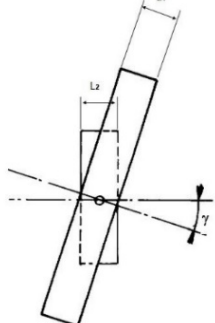


Shaving Methods & Characteristics

Shaving Methods - Every shaving method differs according to the direction of the movement given to the cutter. The choice of method depends on the work piece shape, machine characteristics and volume of production.

Cross Axis Angle - The difference in the helix angle of the gear and the cutter is calculated along the PCD. Cross axis angle is an essential condition for shaving process.

	Conventional Shaving	Diagonal Shaving	Underpass Shaving	Plunge Shaving
Pictorial View & movement of Shaving method				
	Gear and the cutter, are moved parallel to the work piece axes.	The relative motion between cutter and gear takes place with an angle included in the range 5° to 45° w.r.t the gear axis.	Cutter feed in movement towards the gear is perpendicular to gear axis.	Cutter feed in movement towards the gear is radial to gear axis.
Where to be used	Suitable for low and medium production operations.	Suitable for medium & high production operations.	Suitable for high production operations.	Suitable for high production operations.
	Suitable for open gears	Suitable for open gears.	Suitable for shoulder type gears with cross axis angle limitation.	Used for open and shoulder type gears.
	Large width gears can be shaved.	Gear Face width is limited to 100mm as component face width should be necessarily more than cutter face width.	Max. Gear face width is limited to 55mm as cutter face width is more than component face width.	Max. Gear face width is limited to 55mm as cutter face width is more than component face width.
Shaving time	Stroke length is long	Stroke length is relatively short.	Shaving stroke is extremely short.	No longitudinal movement of cutter.
	Very long Shaving time	Shaving time is relatively short	Shaving time is very short.	Shaving time is least.
Cutter Utilization	The cutter works only with a limited contact area at the centre of teeth.	Better use of the cutter that can exploit all its length.	Cutter works progressively and partially along the whole face width.	Cutter works progressively and partially along the whole face width.
Guidelines for better results	Length of traverse should be 1/16" greater than face width of the component.	Sum of Traverse Angle & Cross Axis Angle should not be more than 55°.	It can be used with shoulder gears with minimum cross axis angle of 3°.	Radial in-feed should be carefully selected.
<p>γ = Cross of Axes Angle, ϵ = Diagonal Angle, L1 = Shaving Cutter Tooth Length, L2 = Gear Tooth Length, L = Stroke Length</p>				