



## PROFILE (INVOLUTE) DEVIATIONS

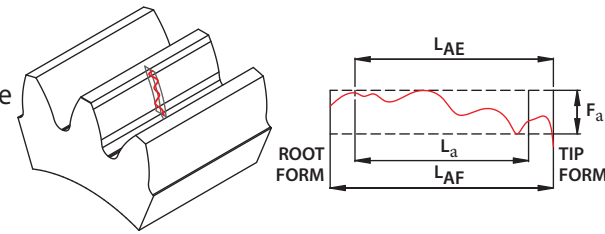
Typically measured on 4 evenly spaced teeth or gaps. Left & right flank measured for each tooth or gap over the usable length  $L_{AF}$ . Analysis region  $L_{\alpha}$  is typically 92% of the active length  $L_{AE}$ .

$F_a$

### Total Profile Deviation

Distance between the highest and lowest points on the profile trace within the analysis region  $L_{\alpha}$  measured perpendicular to a zero-error reference line.

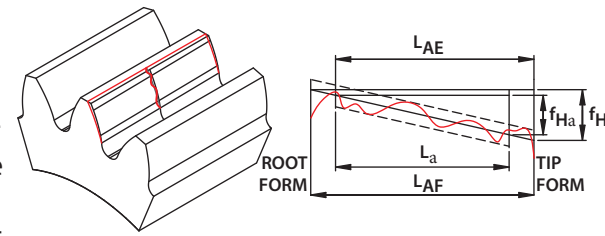
When working to ISO or DIN standards any high point in region from end of  $L_{\alpha}$  to end of  $L_{AE}$  is included.



$f_{Ha}$

### Profile Slope Deviation

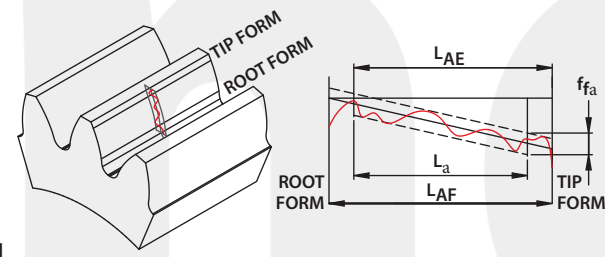
Positive or negative deviation of a best-fit reference line through the profile trace. Measured perpendicular to the start point of a zero-error reference line over the analysis region  $L_{\alpha}$ . When given the symbol  $f_{Ha'}$  the value is from reference lines over the active length  $L_{AE}$ .



$f_{fa}$

### Profile Form Deviation

Distance between highest & lowest reference lines that touch the profile trace & are parallel to the best-fit reference line. Measured perpendicular to a zero-error line. When working to ISO or DIN standards any high point in region from end of  $L_{\alpha}$  to end of  $L_{AE}$  is included.



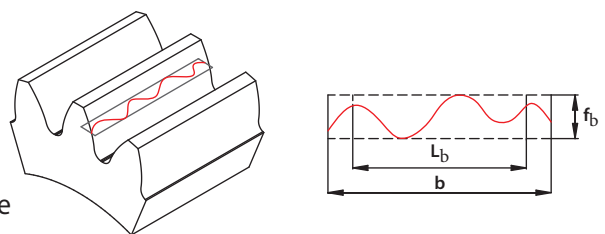
## LEAD (HELIX) DEVIATIONS

Typically measured on 4 evenly spaced teeth or gaps. Left and right flank measured for each tooth or gap. Analysis region  $L_b$  is typically 80% of the gear face width  $b$ .

$F_b$

### Total Lead Deviation

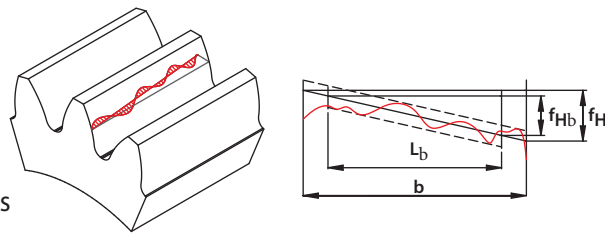
Distance between the highest and lowest points on the flank trace within the analysis region  $L_b$  measured perpendicular to a zero-error reference line. When working to ISO or DIN standards any high point outside of the analysis region is included.



$f_{Hb}$

### Lead Slope Deviation

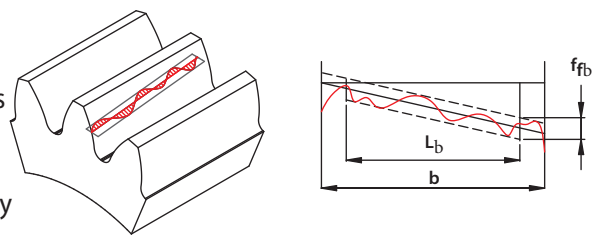
Positive or negative deviation of a best-fit reference line through the flank trace. Measured perpendicular to the start point of a zero-error reference line over the analysis region. When given the symbol  $f_{Hb'}$  the value is from reference lines over the full face width of the gear.



$f_{fb}$

### Lead Form Deviation

Distance between the highest and lowest reference lines that touch the flank trace and are parallel to the best-fit reference line. Measured perpendicular to a zero-error reference line. When working to ISO or DIN standards any high point outside of the analysis region is included.



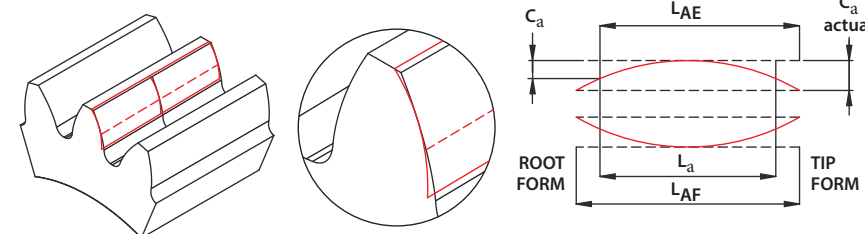
## PROFILE MODIFICATIONS

Typically used to compensate for tooth deflection under load and influence load and transmission error TE of gear systems. Modifications can be different on left and right flanks.

$C_a$

### Crowning

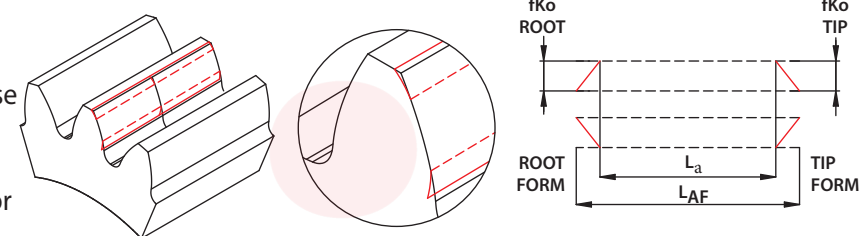
Increasing reliefs of the transverse tooth profile from a point typically central over usable profile length  $L_{AF}$ , in an arc like progression.



$f_{Ko}$

### Tip and Root Relief

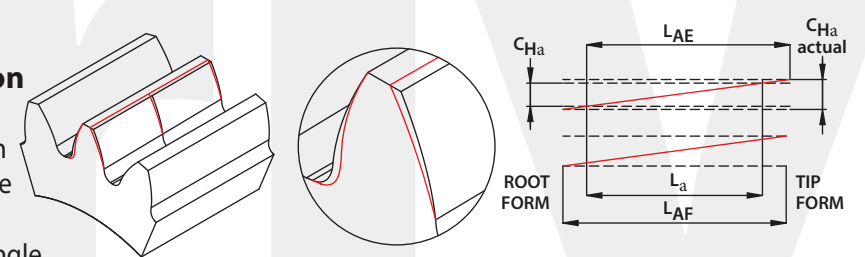
Increasing reliefs of the transverse tooth profile either from the tip, tip form diameter or root form diameter. Can be linear, arc like or parabolic in shape.



$C_{Ha}$

### Pressure Angle Modification

A linear relief applied over the full length of the usable profile length  $L_{AF}$ . Per ISO 21771 a positive value removes material at the tip and increases the effective pressure angle.



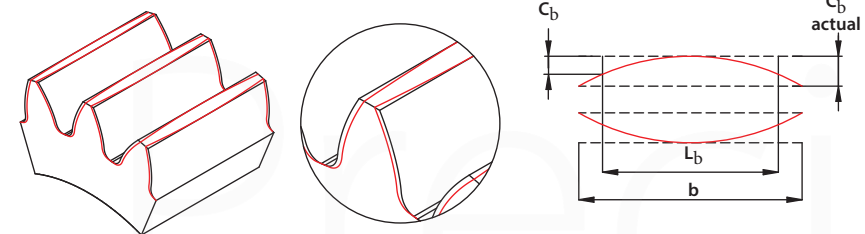
## LEAD MODIFICATIONS

Typically used to compensate for system deflection and influence load distribution over the face width of the gear.

$C_b$

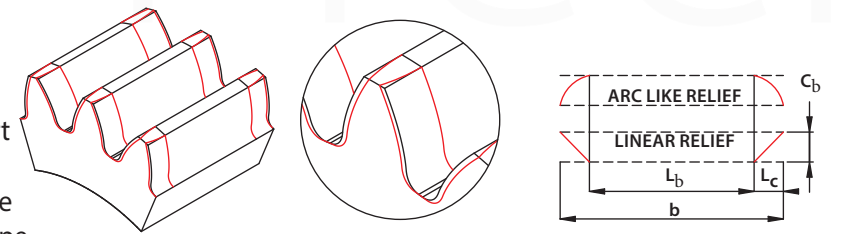
### Lead Crowning

Constantly increasing relief of the flank line in an arc like progression. Typically central over the face width of the gear.



### $C_{bTop}$ $C_{bBottom}$ Lead End Relief

Constantly increasing relief of the flank line applied over a short distance at one or both ends of the face width of the gear. Can be linear, arc like or parabolic in shape.



$C_{Hb}$

### Lead Slope Modification

Constantly increasing relief of the flank line applied over the full face width of the gear. It is not necessarily linear.

