

## Load direction factor - $F_L$

The maximum travel life of a linear bushing may need to be de-rated depending upon the direction the load is applied to the bearing. The Polar charts shown below for each bushing indicate the de-rating factor (or multiplier) based upon the direction the load is applied to the bushing. In most applications not all the bushings will see the same applied load, so you can use the adjacent equation to determine the estimated life based upon the heaviest loaded bushing or the bushing which requires the greatest de-rating factor. This will yield a system life value showing the bearing which has the lowest overall travel life. To use the below graphs, simply find the intersecting point based upon the direction of the load (that the bearing sees) and then use the de-rating factor (i.e. 0.9, etc.), if any.

$$L = \left[ F_H \times F_T \times F_L \times \frac{R}{F \times S} \right]^3 \times B$$

- L** = normal travel life millions of inches (or Km)
- R** = rated dynamic load capacity of linear bushing at 2 million inches of travel (or 50 Km)
- F** = user applied load
- B** = either 2 millions of inches (or 50 Km)
- F<sub>H</sub>** = shaft hardness factor
- F<sub>T</sub>** = environment temperature factor
- F<sub>L</sub>** = load direction factor
- S** = dynamic safety factor

