BEARING SELECTION

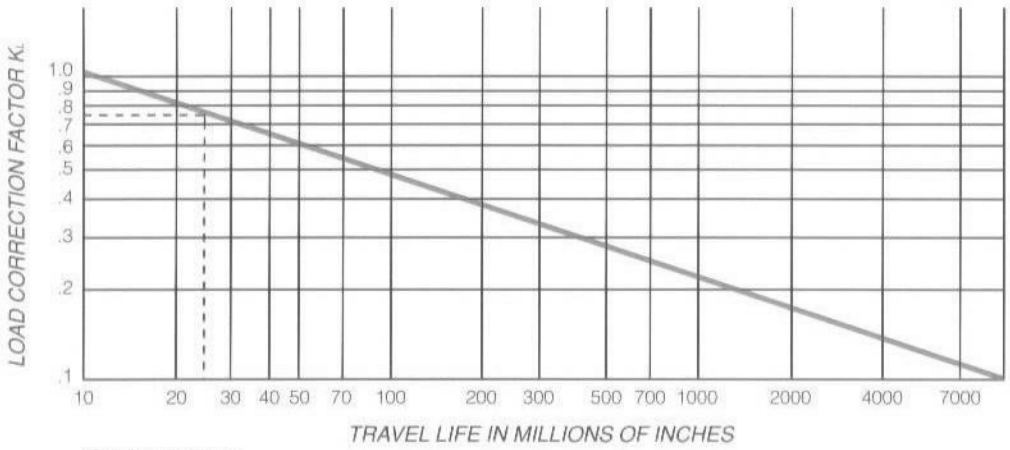

CHART 3

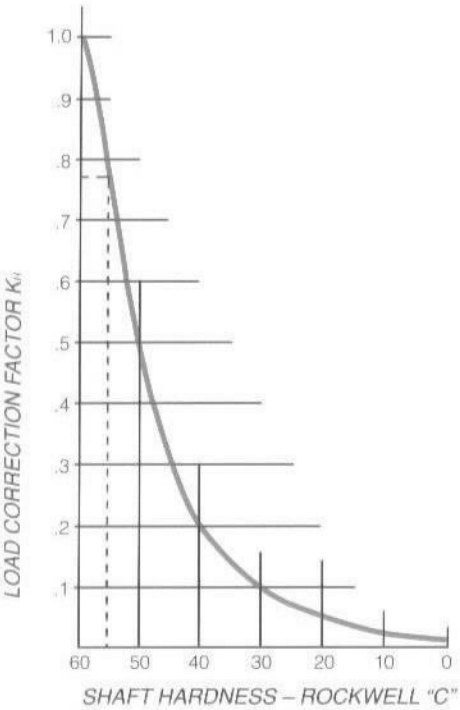

CHART 4

Example: A pick and place machine requires two linear rotary bearings. Total load is 800 lbs. Maximum rotation is 300 RPM. Shafts are to be hardened to Rc 55C. Travel life required is 25,000,000 inches.

Calculations:

Load per bearing = $\frac{800}{2}$ = 400 lbs. @ 300 RPM

Shaft hardness RC 55: from Chart 4 we obtain a load correction factor of $K_H = .76$

Load factor for 25,000,000 inches
Chart 3: $K_L = .75$

Factored load capacity = $\frac{400}{K_H K_L} = \frac{400}{.76 \times .75}$ = 702 lbs.

From Chart 1 we obtain for 702 lbs. @ 300 RPM a Linear Rotary bearing rated @ 878 lbs. (LR-40)

Margin of safety = $\frac{878}{702} - 1 = 25\%$

Note: Means of measuring inches of travel = Shaft Dia. (inches) x 3.1416 x Revolutions + Linear Inches Travel

SHAFT SELECTION

Because of its inherent geometric configuration, the linear rotary bearing has no inner race. Therefore, to take full advantage of its superior characteristics, **proper shaft selection is mandatory.** Under "Design Considerations" correct diameters were suggested. To achieve the full rated life cycle and smooth operation, the shaft should be AISI C-1060 steel case hardened to Rockwell 58-63C or from 440 Stainless Steel, case hardened to Rockwell 50-55C. If shaft hardness cannot be met, see Chart 4 for the reduction factor.

LUBRICATION

The lubrication factor is a function of speed, linear plus rotary, where applicable. The faster the ball movement the less viscous the oil required. It is theoretically possible to use no lubricant at high speeds. The load factor must also be considered. It is suggested that a light machine oil be used, if only to prevent corrosion.