

## WHEEL AND SHAFT MOTORS

### Type XLA XLB XLE

Output shafts run in taper bearings that permit high axial and radial forces. Due to the unique design of the XL, the shaft bearings are not affected by system pressure.

### Compact Motor

Even though this is a type XLC lightweight output housing moderate radial and axial loading is permissible. The curves apply to a B10 bearing life of 3000 hours at 110 rev/min when mineral-based hydraulic oil with anti-wear additions and to specification DIN 51424 is used. The graphs are drawn for a 40cSt oil.

### Effect of shaft speed on life

Because L10 life and speed are inversely proportional to each other, bearing life for speeds other than 110 rpm can easily be calculated, i.e. half speed gives twice life. To calculate the bearing life for a different speed :

$$L_{10 \text{ new}} = 3000 \times \frac{110 \text{ rev/min}}{\text{new rev/min}}$$

### Effect of shaft load on life

If the radial load is less than that shown by the curve, bearing life will be longer than 3000 hours. Assuming the speed is set at 110 rev/min (if not, adjust as shown above) bearing life may be calculated using :

$$L_{10 \text{ new}} = 3000 \times \left[ \frac{\text{curve load}}{\text{new load}} \right]^{3.33^\circ}$$

### Effect of shaft speed on permissible shaft load

Applications such as vehicle propulsion using wheel motors can produce conditions of high load and relatively low speed. In such conditions permissible shaft load must always remain within the mechanical strength limitations.

To calculate permissible shaft load :

$$\text{New load} = \text{Load from curve} \times 3.33 \sqrt{\frac{110}{\text{new speed}}}$$

If you are in any doubt contact Rotary Power Applications Department.

