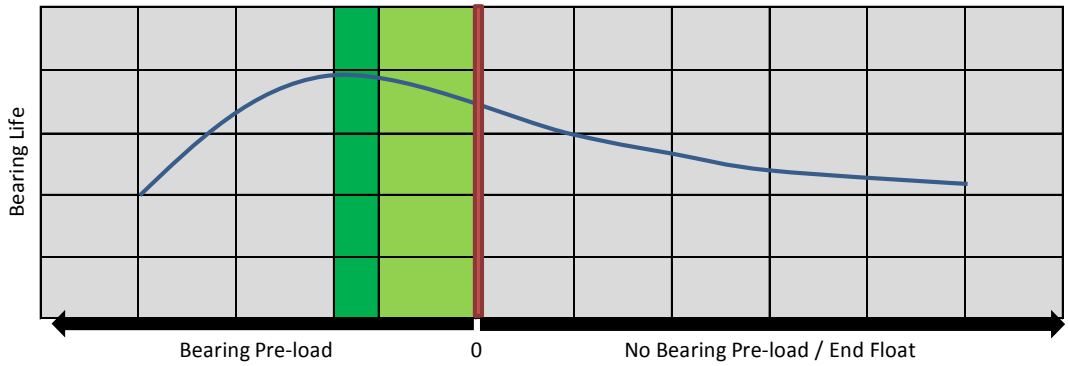
Correct Pre-Load of BPW Taper Roller Bearings

Optimum bearing life is only achievable with the correct amount of bearing pre-load.

Bearing Life vs Pre-Load



Taper roller bearing pre-loads set too high:

- High hub temperatures
- Excessive wear to the bearing rollers
- Accelerated degradation of the lubricant

Taper roller bearing pre-loads set too low:

- Impact to the roller bearings and seats.
- Spalling of the bearing seats
- Displacement of the bearing materials
- Uneven tyre wear
- Uneven brake wear and application

The axle nut on the BPW ECO Plus axles have a built-in torque limiter allowing for optimal bearing pre-load adjustment without the use of an external torque wrench.

The steel section of the axle nut and the reinforced nylon hexagonal section are held together with a spring tensioned cup washer, As the axle nut is tightened, the pre-load on the taper roller bearings increase. Once the optimal preload has been achieved, the special spring tensioned cup washer flattens out and allows the axle nut to click over without increasing the pre-load on the bearings.

To ensure that the optimal bearing pre-load is achieved, remember to:

- Inspect the axle threads for damage before remounting the hub drum assembly as damage may occur due to rough handling of the hub drum assembly during the removal stage.
- Ensure that the axle threads and bearing journals are clean and free of fretting corrosion and dirt. **Caution: Do not use emery tape or sand paper to clean the bearing journals, this only damages the machined surface of the bearing journal!**
- After the bearing journals are clean, apply a thin coat of BPW long life grease to the bearing journals. This promotes correct bearing fitment and reduces fretting corrosion.
- Rotate the hub as the axle nut is tightened, especially when the pre-load of the roller bearings is reached. This will allow the bearing rollers to seat properly. If this is not done in the workshop, the roller bearings will seat during operation which may lead to reduced bearing pre-load.

The majority of bearing failures that occur are due to the incorrect pre-load setting. This can clearly be seen in the below graph.