

Product Name :

Worm and Roller Gearbox (Sectioned Units) Trainer for engineering schools

Product Code :

AUTO-EN010

**Description :**

Worm and Roller Gearbox (Sectioned Units), technical teaching equipment for engineering

Trainer - This steering gear uses an hourglass-shaped worm (the cam) mounted between opposing taper roller bearings. The outer race of the bearings is located in the end plate flange and in a supporting sleeve at the input end of the worm shaft. Shims, incorporated between the end plates and housing, are used for adjusting the taper roller bearing preload and for centralizing the worm relative to the rocker shaft.

A roller follower having two or three teeth engages with the worm teeth and is carried on two sets of needle rollers supported on a short steel pin, which is located between the fork arm an integral part of the rocker shaft. To reduce frictional losses, the needle rollers are replaced by ball races, which support radial loads and also end thrust. The rocker shaft is supported on two plain bushes located in the steering box and other in the top cover plate. A shouldered screw located in a machined mortise to T slot at one end of the rocker shaft, absorbs end thrust in both directions on the rocker shaft.

In order to adjust the depth of mesh of the worm and roller, the steering wheel is moved to the mid-position of the number of turns of the steering wheel from lock to lock. The end thrust shouldered screw is screwed until all free movement is taken up and then the lock nut is tightened to reduce offset distance. The cam is centralised relative to the rocker shaft roller so that there is an equal amount of backlash between the roller and worm at a point half a turn of the steering wheel at either side of the mid-position. Any adjustment necessary is carried out by removing the shims from one end plate and adding the same to the existing shims at the other. The forward and reverse efficiencies of the worm and roller gear are respectively 73% and 48%, which are slightly lower than the cam and peg type of gear. These efficiencies to some extent depend upon the design. To obtain higher efficiencies a needle or taper roller bearing can be used between the rocker shaft and housing instead of the usual plain bush type of bearing.

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