

# Design & Fabrication of Shaft Driven Bicycle

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## Abstract

A shaft driven bicycle is a bicycle that uses a shaft drive instead of a chain which contain two set of bevel gear at both the ends to make a new kind of transmission system for bicycle for getting high reliability system, and more safe system. This project is developed for the users to rotate the back wheel of a two wheeler using propeller shaft. Usually in two wheelers, chain and sprocket method is used to drive the back wheel. Shaft-driven bikes have a large bevel gear where a conventional bike would have its chain ring. This meshes with another bevel gear mounted on the drive shaft. The use of bevel gears allows the axis of the drive torque from the pedals to be turned through 90 degrees. The drive shaft then has another bevel gear near the rear wheel hub which meshes with a bevel gear on the hub where the rear sprocket would be on a conventional bike, and cancelling out the first drive torque change of axis.

**Keywords:** Bevel gears, Fabrication, Propeller shaft, Reliability, Shaft Driven Bicycle

## 1 INTRODUCTION

A shaft-driven bicycle is a bicycle that uses a drive shaft instead of a chain to transmit power from the pedals to the wheel arrangement displayed in the following fig 1. Shaft drives were introduced over a century ago, but were mostly supplanted by chain-driven bicycles due to the gear ranges possible with sprockets and derailleur. Recently, due to advancements in internal gear technology, a small number of modern shaft-driven bicycles have been introduced. Shaft-driven bikes have a large bevel gear where a conventional bike would have its chain ring. This meshes with another bevel gear mounted on the drive shaft which is shown in fig 1.



Fig. 1: Replacement of chain drive bicycle with driveshaft

The use of bevel gears allows the axis of the drive torque from the pedals to be turned through 90 degrees. The drive shaft then has another bevel gear near the rear wheel hub which meshes with a bevel gear on the hub where the rear sprocket would be on a conventional bike, and cancelling out the first drive torque change of axis.

The design of bevel gear produces less vibration and less noise than conventional straight-cut or spur-cut gear with the straight teeth. The shaft drives only needs periodic lubrications using a grease gun to keep the gears running quite, smooth and efficient transfer of energy from the pedals to the rear wheel. It is attractive in look compared with chain driven bicycle.

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