SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)
COIMBATORE-35
Accredited by NBA-AICTE and Accredited by NAAC – UGC with A++ Grade
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UNIT III: GEARING MECHANISM

TOPIC: **Equivalent Power**

TOPIC OUTLINE

- Introduction
- Block Diagram
- Characteristics
- Types
- Advantages
- Disadvantages
- Applications

Introduction of Powertrains

- A Transmission system uses a clutch, gear box, propeller shaft and a differential gear to transmit power from engine to the road wheels
- The power may be transmitted to rear or front or all four wheels depending on the drive used
- The clutch and gear box varies the ratio of torque output to torque input
- The **propeller shaft** transmits final torque to the rear axle from gear box
- A **differential gear** equally distributes the final torque between the road wheels.

Functions of Transmission System

- It disconnects engine from driving wheels when required
- The engine is connected to driving wheels when required
- It changes ratio of torque output to torque input, as desired
- It turns the drive through a right angle

Purpose of Gear Box

- Provides speed and torque conversions because of the limitations of internal combustion engines.
- Also facilitates change of direction of output shaft for reversing.
- Automotive gearboxes are used to reduce load on the engine by manipulating torque and speed.
- They have the option to select one of several different gear ratios.
- Once the engine has reached a number of revolutions per minute, it is advisable to increase the gear to reduce the engine rpm to reduce wear on the engine, allow more control, and greater speeds, better acceleration, and better fuel economy.
- Most gearboxes are used to increase torque & reduce the speed of a output shaft. This produces a mechanical advantage
- Automotive gearbox also have the provision to do the opposite i.e. provide an increase in output shaft speed with a reduction of torque (overdrive).

Epicyclic/Planetary Gear Box

	Driving Member	Driven Member	Stationary
Forward Very Slow	Sun	Planetary	Ring
Forward Slow	Ring	Planetary	Sun
Forward Fast	Planetary	Ring	Sun
Forward Very Fast	Planetary	Sun	Ring
Reverse Slow	Sun	Ring	Planetary
Reverse Fast	Ring	Sun	Planetary

Different Types of Gears (Helical Gear)

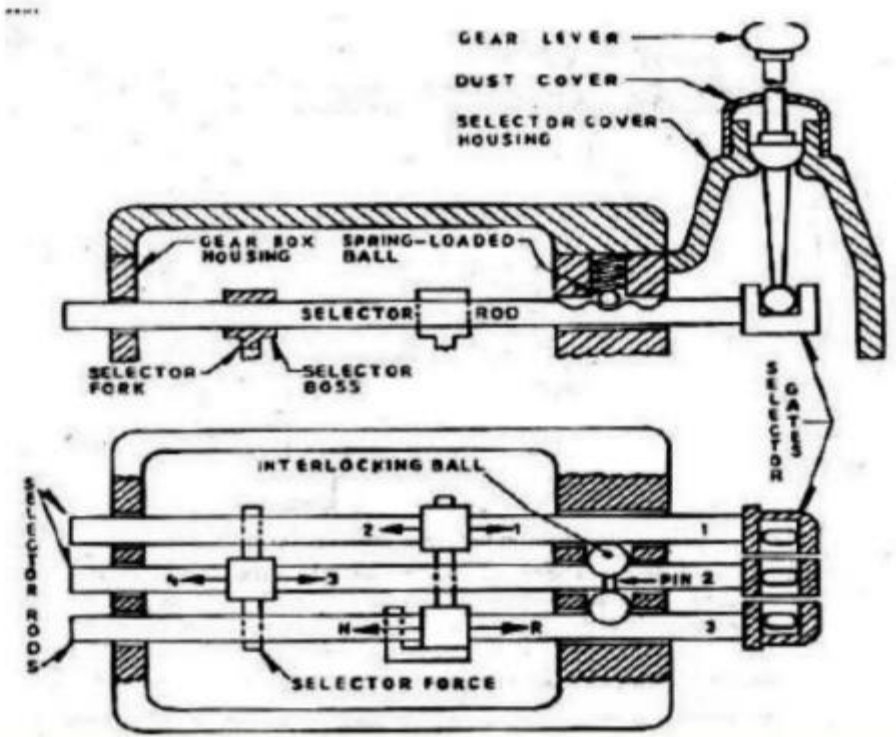
Advantages

- Load can be divided on more then one teeth.
- Light in weight
- Can rotate without vibration at high speed
- Works easily and noiseless
- Doesn't wear out fast

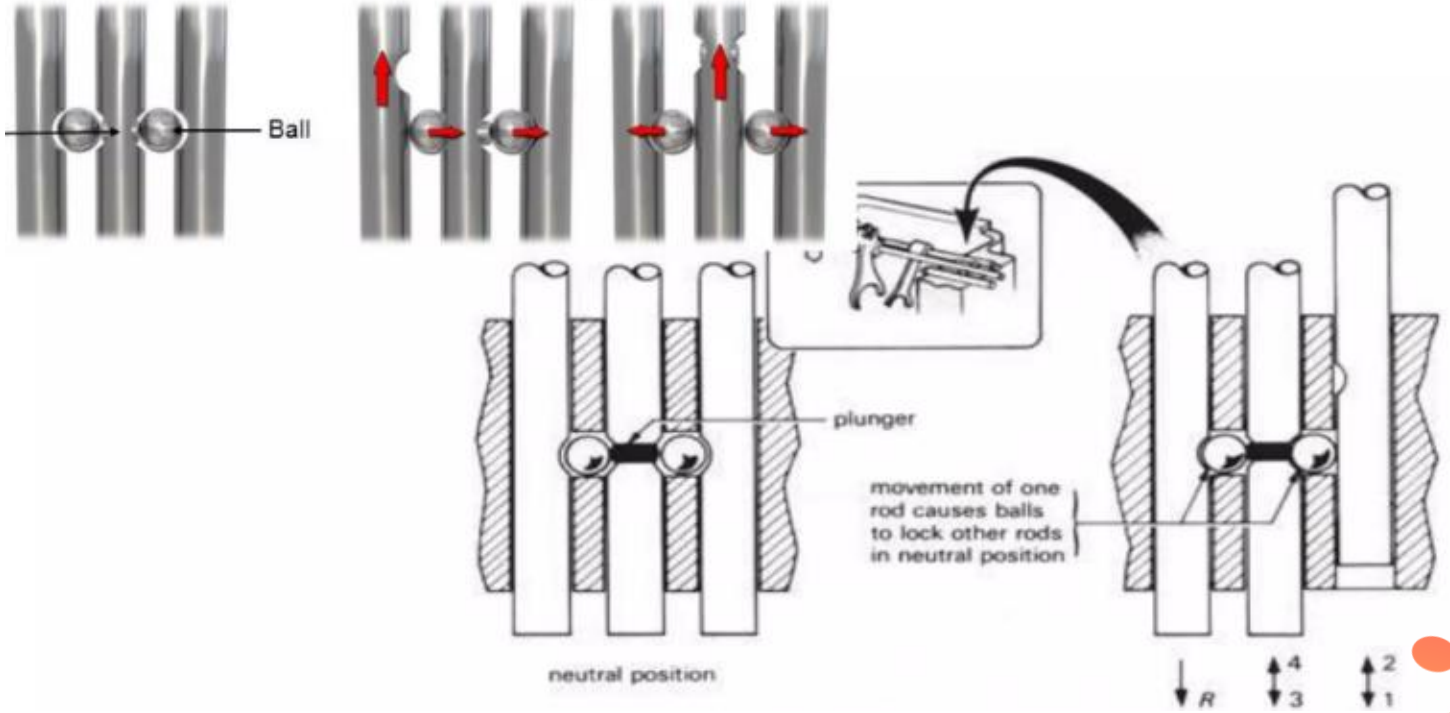
Disadvantages

- Due to inclined tooth, spacer is required at shaft end
- Possible that gear may come out of meshing

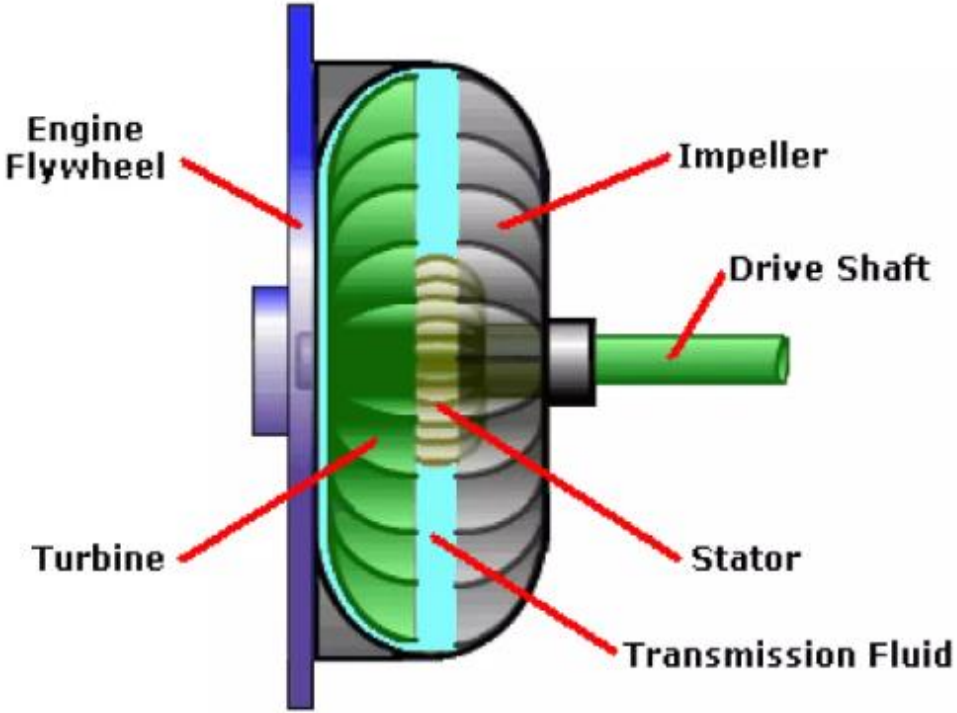
Gear Shifting (Selector) Mechanism



Gear Inter-locking Device



Torque Converter



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