

## Chapter-1 Introduction to Automobile Transmission System

### Transmission System:

- The mechanism that transmits the power developed by the engine of automobile to the engine to the driving wheels is called the Transmission System.
- Essential components of transmission system are modulator, torque converter, planetary gears, governor, computer, seals, output shafts, differential, hydraulic designs, axles and pressure plate.

### Introduction to the Transmission Systems in Automobile:

The most common transmission systems that have been used for the automotive industry are:

- Manual transmission,
- Automatic transmission,
- Semi-automatic transmission
- Continuously-variable transmission (C.V.T.)

#### 1 Manual Transmission:

The first transmission invented was the manual transmission system. The driver needs to disengage the clutch to disconnect the power from the engine first, select the target gear, and engage the clutch again to perform the gear change. This will challenge a new driver. It always takes time for a new driver to get used to this skill.

#### 2. Automatic Transmission:

An automatic transmission uses a fluid-coupling torque converter to replace the clutch to avoid engaging/disengaging clutch during gear change. A completed gear set, called planetary gears, is used to perform gear ratio change instead of selecting gear manually. A driver no longer needs to worry about gear selection during driving. It makes driving a car much easier, especially for a disabled or new driver. However, the indirect gear contact of the torque converter causes power loss during power transmission, and the complicated planetary gear structure makes the transmission heavy and easily broken.

#### 3. Semi-Automatic Transmission:

A semi-automatic transmission tries to combine the advantages of the manual and automatic transmission systems, but avoid their disadvantages. However, the complicated design of the semi-automatic transmission is still under development, and the price is not cheap. It is only used for some luxury or sports cars currently.

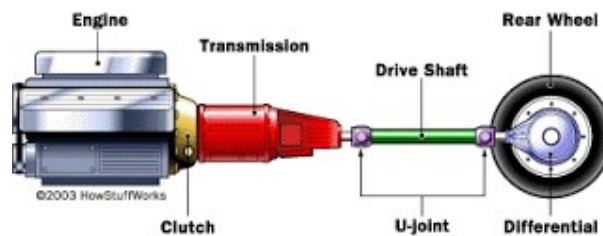
#### Continuously Variable Transmission (C.V.T.):-

The Continuously Variable Transmission (C.V.T.) is a transmission in which the ratio of the rotational speeds of two shafts, as the input shaft and output shaft of a vehicle or other machine, can be varied continuously within a given range, providing an infinite number of

possible ratios. The other mechanical transmissions described above only allow a few different gear ratios to be selected, but this type of transmission essentially has an infinite number of ratios available within a finite range. It provides even better fuel economy if the engine is constantly made run at a single speed. This transmission is capable of a better user experience, without the rise and fall in speed of an engine, and the jerk felt when changing gears.

## MANUAL TRANSMISSION SYSTEM

Manual transmissions also referred as stick shift transmission or just 'stick', 'straight drive', or standard transmission because you need to use the transmission stick every time you change the gears. To perform the gear shift, the transmission system must first be disengaged from the engine. After the target gear is selected, the transmission and engine are engaged with each other again to perform the power transmission. Manual transmissions are characterized by gear ratios that are selectable by locking selected gear pairs to the output shaft inside the transmission.



The transmission system delivers the engine power to wheels.

### Transmission System is composed of:

- Clutch
- The gear box
- Propeller shaft
- Universal joints
- Rear axle
- Wheel
- Tyres
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## CHASSIS OF AN AUTOMOBILE

- Automotive chassis is a skeletal frame on which various mechanical parts like engine, tires, axle assemblies, brakes, steering etc. are bolted.
- At the time of manufacturing, the body of a vehicle is flexibly molded according to the structure of chassis.
- Automobile chassis is usually made of light sheet metal or composite plastics. It provides strength needed for supporting vehicular components and payload placed upon it.
- Automobile chassis helps keep an automobile rigid, stiff and unbending. Auto chassis ensures low levels of noise, vibrations and harshness throughout the automobile.

Chassis of an automobile generally consists of the following components suitably mounted on it

- Engine and the Radiator
- Transmission system (clutch, gear box, propeller shaft etc.)
- Suspension system
- Road Wheels
- Steering System
- Brakes
- Fuel Tank

Various types of Frames: Depending upon the application, some of the main types of frame are as below:

#### Ladder Frame



#### Tubular Frame



#### Monocoque



#### What is Rolling Chassis?

It is the frame in 'ready to run' condition. It means that such a frame has engine, transmission, axles, tires and all the other systems attached to it that are mandatory to run a vehicle (collectively called 'Running gear'). Hence, it could be legally driven on road.

Manufacturers generally use this term to refer the trucks or buses which they transport to the vehicle body-builder which is where they build the body on them.

