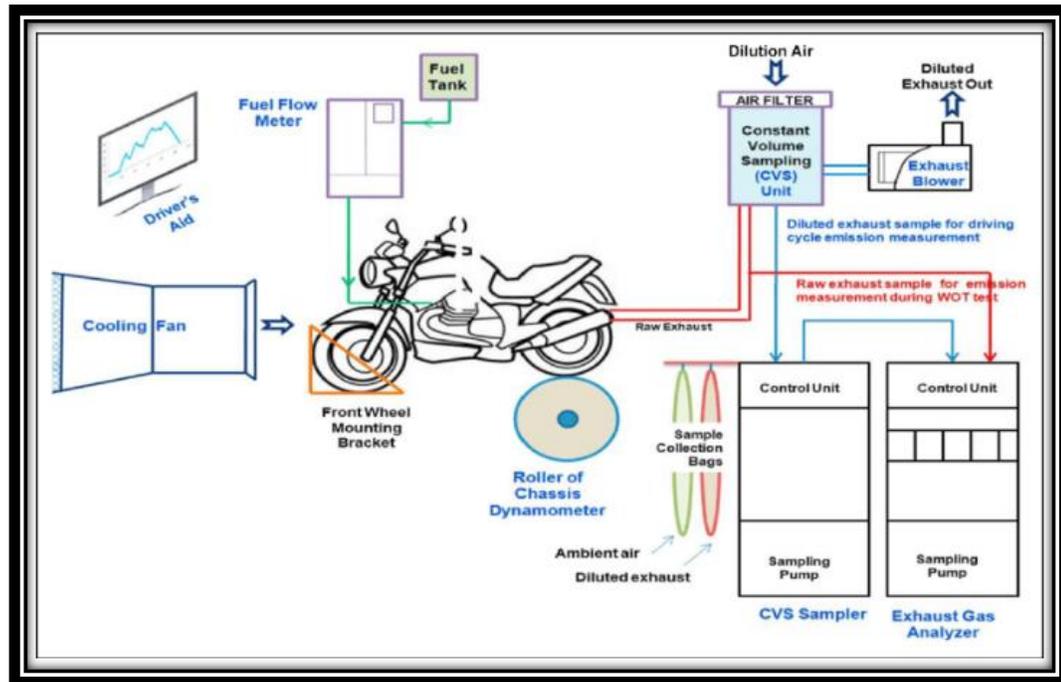


# TWO WHEELER CHASSIS DYNAMOMETER



Schematic Diagram of Two Wheeler Chassis Dynamometer

**Aim:** - To study the vehicle performance by using Chassis dynamometer.

## **Objectives:-**

1. To understand procedure of vehicle testing for performance on chassis dynamometer.
2. To conduct trial on performance parameters of the vehicle.

## **Chassis Dynamometer:-**

It is an equipment used for testing a complete vehicle assembly. In this system the vehicle is run on a set of rollers so that it creates a similar effect as a vehicle is rolling on road. The vehicle can be tested at fixed position. The chassis dynamometer is a very useful equipment for testing and tuning a vehicle to optimize performance.

## **Industrial uses:-**

1. Used by Automotive Research Association of India (ARAI)

ARAI is one of the Motor Industry which tests performance parameters of automobiles before launching them in the public sector.

## **Basic types of Dynamometer:**

### 1. Inertia type of dynamometer

It is work on principle of inertia. The vehicle is made to run on roller. The roller are all by vehicle to speed auto equalization, is presented in geographical format in the form of graph. The pick power can be observe in this data.

### 2. Brake roller chassis dynamometer

In this type, roller is not solid and is light in weight. The power roller are coupled to suitable loading system such as eddy current dynamometer. Hydraulic dynamometer is very useful or turning a vehicle can be turned simultaneously road condition of road resistance, wind resistance etc.

Various tests carried out using chassis dynamometer,

#### 1. Acceleration test

#### 2. Braking test

#### 3. Fuel Consumption test

## **Vehicle Performance test:-**

### 1. Acceleration test:

This test can be done in two condition wind resistance due to gradient etc. are calculated. The front rotational mass of dynamometer is calculated. The vehicle is accelerated at this torque to get time of acceleration in distance coverage during acceleration.

### 2. Braking test:

In this test setting of higher speed from which braking performance is measured is set. The vehicle is accelerated to a speed of 8-10kmph above top speed. The clutch should be preset with read in braking position.

### 3. Fuel Consumption test:

This again may be conducted in either loaded or unloaded condition depending on the capacity of vehicle accordingly vehicle is to be run on steady crushing speed rated for best economy on rollers. In this test the total time for fuel consumption and the distance covered for consuming the fuel is displayed.

## OBSERVATION TABLE

<b>Description</b>	<b>Max Speed (km/hr)</b>	<b>Time Taken (sec)</b>	<b>Torque (Nm)</b>	<b>Power (Kw)</b>	<b>Tractive Force (N)</b>
<b>1<sup>st</sup> Gear</b>	<b>16.6</b>	<b>1</b>	<b>0.580</b>	<b>0.059</b>	<b>57.7</b>
<b>2<sup>nd</sup> Gear</b>	<b>31.7</b>	<b>3</b>	<b>0.730</b>	<b>0.218</b>	<b>72.7</b>
<b>3<sup>rd</sup> Gear</b>	<b>46.6</b>	<b>3</b>	<b>0.423</b>	<b>0.263</b>	<b>42.1</b>
<b>4<sup>th</sup> Gear</b>	<b>56.3</b>	<b>3</b>	<b>0.419</b>	<b>0.377</b>	<b>53.0</b>
<b>5<sup>th</sup> Gear</b>	<b>67.3</b>	<b>5</b>	<b>0.433</b>	<b>0.680</b>	<b>72.7</b>

### **Conclusion:-**

In this way, we have studied performance of vehicle on chassis dynamometer.