

A REVIEW ON DYNAMOMETER

¹ Sourav Roy, ²Shyamji Agnihotri and ³Harsimran Singh Sodhi

^{1,2} B.E, student, Mech. Engg. Department, Chandigarh University, Mohali, India

³Assistant Professor, Department of Mechanical Engineering Department

Abstract

In this review of dynamometer, we will discuss about what dynamometer is, history of dynamometer, principle, function and applications of dynamometer, types of dynamometer, invention of dynamometer. We will discuss the principle and working behind the simple basic dynamometer to the advanced dynamometer with the help of a diagram. We will discuss the applications of Chassis Dynamometer and Engine Dynamometer and how they work and why we use them in automotive industries.

Keywords: *principle, torque, speed, hydraulic, shaft, working, study, brakes, types, testing, advancements, heat, machine.*

Introduction

Dynamometer is a device for measuring torque, speed or braking power of a rotating machine or engine. Dynamometers are basically designed for both power absorption and power transmission. Some dynamometer absorbs power and release or dissipated them in the form of heat and some helps power transmission which is helpful in measuring torque of rotational machine. The first dynamometer was built by French rifle maker and engineer Edme Reigner in 1798 and hence known as Reigner dynamometer. From then, dynamometers are use and various types of dynamometer are made to perform various functions like chassis dynamometer is used for complete vehicle testing, hydraulic dynamometer, AC and DC dynamometer etc.

Invention of Dynamometer proved very useful to the automotive and mechanical industries. Dynamometers are used for the study and testing of load variations in turbines, solar power plants, wind mills, dams for different wind variations, solar energy extraction, generation of electricity at higher rate. Automotive industries use dynamometers for testing the automotive motors and engine and enhance their performance and durability to set new standard benchmark in the field of Automobiles. Engine dynamometers are used for checking the breaking system, verify engine operation at the given standard rates and performance and diagnosing engine power loss, vibration etc.

Principle & Working

The principle of working of a basic dynamometer is that they turn the rotating force or torque into an electrical signal which can be easily amplified and converted and displayed with the help of a transducer, strain gauge and display screen. Some dynamometer use electric motors as motor testers connected with wires supplying current which are connected to voltmeter, ammeter and ohmmeter for display of reading. Advanced Dynamometers used sensors that can sense the speed of the rotating shaft and calculate their torque by number of rotations the shaft is making per minute.

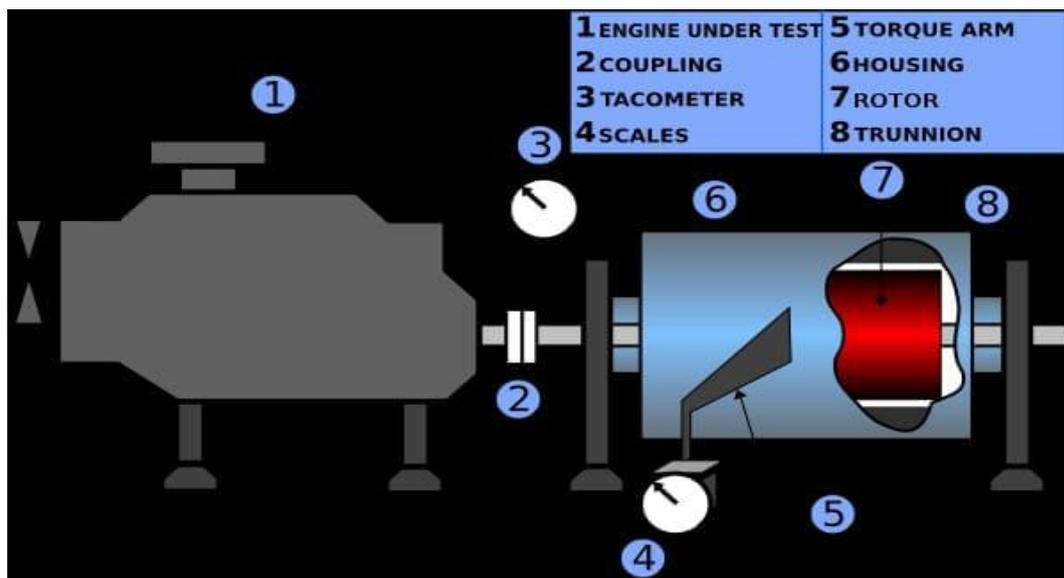


figure 1. Diagram of dynamometer

Chassis & engine dynamometer

Chassis Dynamometer and Engine Dynamometer is the two most commonly used dynamometer in automobile industries and for vehicle testing. chassis Dynamometer use advanced computerised method basically the one with sensors to calculate the wheel rotational angle to determine engine or motor torque. ChassisDynamometer ensures optical performance with heavy-duty vehicles and with high horse power engines used in supercars or formula cars for race. Whereas, Engine dynamometers uses more conventional way to take measurements from the engine to any other system present. The result or measurement produced by the Engine dynamometers are highly accurate. They are quite famous among engine rebuilders, automobiles manufacturer and companies that produces high performance vehicle. Engine dynamometer drive productivity and ensure total system check-up which delivers the best overall value for performance, validations, diagnostics and engine break-ins. Every dynamometer has different functions, but some components or units of all dynamometers remains the same- an absorption unit, section for developing or producing torque (basically

done by friction, electromagnetic power or hydraulic fluid) and a measuring device to calculate torque or speed which uses sensors connected with a display showing measurements or readings.

Conclusion

Dynamometers are of great benefit to the manufacturer of automobiles engine or vehicles. they help to determine the power of their newly produced engines and motor before they release them in the market for commercial purposes. They help manufacturer to repeatedly go through the system of the vehicles which may have issues and identify the problems which may be like faulty brakes, excessive wheel rotation, low acceleration of the engine and ultimately help them to take care of all these things and improve their engine based on their industrial standards. By the passage of time, Dynamometers are becoming more advanced which reduces the error rate and we can build a more efficient machine or engine with more improve safety, power and performance of engines or motors.

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