

CHAPTER I

INTRODUCTION

1.1 Background

Transportation equipment's most commonly used in Indonesia is motorcycle. Fact, the Indonesian Motorcycle Industry Association claimed the first quarter motorcycle sales reached 2.7 million units. The amount is certain to secure a motorcycle sales target this year as many as 8.4 million units. This is because the price is relatively cheap and easy to use. However, motorcycle have a weakness related to stability, which is easily disturbed when compared with the car. On vehicle that required not only passenger comfort while riding the vehicle, but also good control. This will facilitate the rider in controlling the vehicle, also to ensure the security and safety.

One of the control system and safety features of a vehicle is brake system. It must slow a moving vehicle, bring a vehicle to stop, and hold a vehicle stationary when stopped. Problem often occurred when the driver tried to stop his vehicle, especially if the vehicle is stopped when moving at high speed. At these conditions are not expected occurrence of locking the wheels on a vehicle that can cause the vehicle unstable and difficult to control, it can cause accidents.

1.2 Problem of The Study

In our society has developed the habit of using the wrong braking system, which only using the rear brake. This is taken from the habit of riding a bicycle that became the basic of a motorcycle. Besides, because the assumption that by using the front brake riders can be toppled. Braking by using only the rear brake of course can lead to loss of balance of vehicle, especially when the wheel until locked, besides that it would be less than maximum braking. Of course it would be useless if the enhanced braking system but the driver will only use the rear brake only.

The new technology comes combined brake system that uses a single actuator, as is commonly used in cars. So by using the feet are usually only for the rear brake, can also enable the front brake. In this way can maximize performance brake system without having to change the habits of driver.

1.3 Problem Statement

The purpose of this final project are to investigate forces during braking in motorcycle (CBR 250 CC) with combined brake system. How to know stopping distance of motorcycle (CBR 250 CC) with one passenger (235kg) and two passengers(295kg).

1.4 Objectives

The objectives of the research are as follow:

- a. To investigate the weight transfer that resulted by motorcycle (CBR 250 CC) with combined brake system in deferences velocity and weight.
- b. To investigate the stopping distance that resulted by motorcycle (CBR 250 CC) with combined brake system in deferences velocity and weight.
- c. To investigate the brake pedal forces that resulted by the maximum braking force.

1.5 Methodology

This final project report done by several methods, namely:

- a. Observation methods: by observing, analyzing, and searching the data directly in the subject.
- b. Literature methods: to obtain the basic of theory using equations or formulas from an existing references.
- c. Interview method to obtain information and data by asking directly to the workshop or related resources.

1.6 Assumption and Problem Limitation

On this project writer is probably necessary restrictions on the problem and making some assumptions, namely:

- a. The vehicle moves straight with constant velocity before being braking.
- b. Using track with dry asphalt road with a flat surface.
- c. Using hydraulic brake system front and rear.
- d. Suspense is considered rigid and conducted a theoretical analysis.
- e. Tires in good condition with standard air pressure and always in contact with the surface asphalt.
- f. At the time of engine braking are not coupled, so that the engine brake effect negligible.
- g. Think distance is negligible. Think distance is how long it takes from when your eyes see a stationary object in front of driver until driver press the brake pedal)

1.7 Writing Systematic

Systematic of writing this research, arranged in 5 chapters with the following systematic writing:

CHAPTER I. PREFACE

This chapter contains background, problem of the study, problem statement, objectives, methodology, assumption and problem limitation, and writing systematic.

CHAPTER II. REVIEW OF LITERATURE

This chapter contains study of literature, principle of braking, hydraulic system and disc brake unit.

CHAPTER III. FUNDAMENTAL THEORY

This chapter contains center of gravity, braking effort vehicle, stopping distance, aerodynamic resistance, the master cylinder and the caliper.

CHAPTER IV. CALCULATION ANALYSIS

This chapter contains vehicle dimension, calculation of the center of gravity, hydraulic analysis, aerodynamic analysis, analysis of stopping distance.

CHAPTER V. CLOSING

This chapter contains suggestion and conclusions.