CHAPTER I
INTRODUCTION

1.1 Background

Brakes are an important component of motor vehicle. Brake function is to stopping or slowing down. In general, the vehicle uses hydraulic brake system. The Components of hydraulic brake are master cylinder and caliper (cylinder body). CylinderMaster distributes a braking pressure from the pedal to calipers (cylinder body) through the brake hose. The caliper (cylinder body) is used to forward a hydraulic pressure to brake pad.

Brake works by using pressure principle to slow down the rotation so that it reveals a friction between the discs (disc brake) with brake (brake pads). These friction causes vibration, heat and noise. Disc roughness and friction factor trigger the vibration of brake pad and caliper.

Vibration in the brake components during operation can cause noise. It comes from the friction between brake pads that have been worn by the disc brakes. One of factors which cause the vibration when braking operation is worn thin brake pad. The effects of excessive vibration will cause inconvenience driving. In addition, the vibration at brake pads have worn also the performance or the operation of the braking was not optimal.

Brake pad is so extremely important when braking. It needs special attention to the condition of the brake pad. Therefore, there should be a study
to determine the effect of the brake pads thickness against the brake disc vibration in the system.

1.2 Problem Formulation

From above explanation, it can be taken a problem formulations, namely: how to influence the thickness of the brake pads on a range of braking conditions on the vibration of the disc brake system.

1.3 Limitations

To determine the direction of research, given the extent of the problem as follows:

a. All components of the braking device is assumed to be at normal conditions (80% for the master, calipers, discs and brake hoses).

b. Load conditions are considered constant.

c. Data Display is only in the form of vibration amplitude value.

d. At the same braking pressure, the frictional force is assumed to be the same for all variations in the thickness of the brake lining.

e. The friction coefficient is assumed to be the same on this test.

1.4 Research Objective

The purpose of this study is determining the effect of the brake lining thickness at various braking conditions on the vibration disc brake system in the form of changes in the value of the vibration amplitude.
1.5 Benefits of Research

The benefits of this study is predicting maintenance activities (*predictive maintenance*), i.e. for monitoring the condition of the brake on the motor vehicle, so that the condition can be monitored without having to do the pulling down, and if there is wear on the brake linings can be seen directly.

1.6 Writing System

Systematic of writing consists of:

a. Chapter I. Introduction, provides background research, problem formulation, limitations, objectives and benefits of the research, and systematic writing.

b. Chapter II. Basic theory, contains a literature review related to the brakes, vibration, amplitude, frequency.

c. Chapter III. Research Methods, contains work piece under study, machines, and measuring instruments used in the study, the research and implementation of research consists of preparing the braking system, brake variations and vibration data processing.

d. Chapter IV. Contains data and analysis obtained from testing, brake wear analysis based on the graph the value of the vibration acceleration.

e. Chapter V. Conclusion contains conclusions and suggestions related to this research as well as to subsequent researchers.