FINAL PROJECT

INFLUENCES OF BRAKE PAD THICKNESS AGAINST DISC BRAKE SYSTEM VIBRATION ON VARIOUS BRAKING CONDITION

Submitted as a Partial Fulfillment of the Requirements for Getting Bachelor Degree of Engineering in Automotive Department

Arranged by:
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IN AUTOMOTIVE/MOTORCYCLE ENGINEERING
MUHAMMADIYAH UNIVERSITY OF SURAKARTA
November 2014
DECLARATION OF RESEACH AUTHENTICITY

I assert verily that the research entitled:

INFLUENCES OF BRAKE PAD THICKNESS AGAINST DISC BRAKE SYSTEM VIBRATION ON VARIOUS BRAKING CONDITION

That made to fulfill some of requirement to get Bachelor Degree of Engineering in Automotive Department of Muhammadiyah University of Surakarta, as far I know is not a plagiarism of research that has been published, except the information source that to solve the problem.

Surakarta, October 2014

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The Final Project entitled "Influences of Brake Pad Thickness Against Disc Brake System Vibration on Various Braking Condition" has been approved by Supervisors and authorized by Secretary of International Program as partial fulfillment of the requirements for getting the Bachelor Degree of Engineering in Automotive Department of Muhammadiyah University Surakarta.

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INFLUENCES OF BRAKE PAD THICKNESS AGAINST DISC BRAKE SYSTEM VIBRATION ON VARIOUS BRAKING CONDITION

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ABSTRACT

Abstract:

The aim of this study is to determine the condition of the brake vibration and analyze the parameters that affect the vibration response occurring. Test was carried out by varying the thickness of the brake lining. Data taken for thickness of the brake lining (7, 5 and 3) mm, with a variation of the braking pressure 0.6 brand 1 bar, shaft rotation (425, 63, 850, and 1061) rpm, the axial and radial direction, vibration measurement used Lutron VB_8202 vibration meter.

Vibration on acceleration measurements show that vibration acceleration in the radial direction which seems higher when compared to the axial direction, can be in the know in the axial direction 425 RPM vibration acceleration value is not more than 8.2 m/s while the radial direction up to 11.6 m/s.
Increasing the value of amplitude 2-4.7 m/s² in dictate Lessing of Brake pad worn. The increase in vibration owing to the reduced value of brake lining.

**Keywords:** Brake, Brake lining thickness, Brake pressure, Damping.
MOTTO

Success is not measured by wealth, success is an achievement that we want.

To get a success, your courage must be greater than your fear.

Do whatever you like, be consistent, and success will come naturally.

Intelligence is not the determinant of success, but hard work is the real determinant of your success.

Wise man talks because they have something to say. Fool man talks because they have to say something.

If you cannot be a smart person, so be a good person.

“Verily, never will Allah change the condition of a people until they change it (their state of goodness)”

(QS. Ar-Ra’du:11)

“Nay, seek (Allah’s) help with patient perseverance and prayer: It is indeed hard, except to those who bring a lowly spirit” (QS. Al-Baqarah: 45)
DEDICATION

This Research paper is dedicated to:

Allah SWT,

Thanks for the best everything that you have given for me and thanks for you love that always make me to never give up to do the best. I believe that you will always give me the best for everything.

My beloved Mom (Partiwi, S.Pd.) and Dad (Tri Tukimin, S.P),

Thanks for your prayer, love, support and affection.

You always give me happiness but often I made you disappointed.

I am sorry and I promise to give you the best the future.

My Sister (Puji Sri Lestari, S.Pd and Desvevapa tri handayani)

All my friends (Automotive Engineering “2010”, etc)

Thanks for support and love me.
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15. Those who cannot be mentioned one by one, writer wants to say his thank and appreciation to all of them.

The writer realizes that this research paper is far from being perfect, so the writer sincerely welcome any constructive comment, criticism, and suggestion.

Wassalamu ‘alaikumWr. Wb.

Surakarta, November 2014

Writer

Dwi Aji Saputra
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LIST OF SYMBOL

\( \ddot{x} = \text{Acceleration} \ (m/s^2) \)

\( \dot{x} = \text{Velocity} \ (m/s) \)

\( x = \text{Displacement} \ (m) \)

\( \omega_n = \text{Natural Frequency} \ (\text{rad/s}) \)

\( k = \text{Spring Constant} \ (N/m) \)

\( m = \text{Mass} \ (Kg) \)

\( F_f = \text{Friction Force} \ (N) \)

\( N = \text{Normal Force} \ (N) \)

\( C_c = \text{Critical Damping} \ (N.s/m) \)

\( \Delta L = \text{Length Displacement} (m) \)

\( A = \text{Area} \)

\( E = \text{Modulus Youngs} \ (Pa) \)

\( L = \text{Length} \ (m) \)
ABSTRACT

The aim of this study is to determine the condition of the brake vibration and analyze the parameters that affect the vibration response occurring. Test was carried out by varying the thickness of the brake lining. Data taken for thickness of the brake lining (7, 5 and 3) mm, with a variation of the braking pressure 0.6 brand 1 bar, shaft rotation (425, 63, 850, and 1061) rpm, the axial and radial direction, vibration measurement used Lutron VB_8202 vibration meter.

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