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Evaluation of Engine Overhaul as a Maintenance Effort Supra Fit New 2006 Engine

Albert Kasman *, Nur Hidayat
Mechanical Engineering Study Program, Akademi Teknologi Bogor
Jl. Bina Marga No.17, RT.05/RW.08, Baranangsiang, Kec. Bogor Tim., Kota Bogor, Jawa Barat 16143, Indonesia

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ABSTRACT

The overhaul of the 2006 Honda supra fit new motorcycle engine is overhaul, inspection, and assembly of engine components. In this overhaul, visual inspection and observation of each component is carried out, to compare the standard size of each component with the results of the measurements made. This overhaul process includes transmission inspection, crankcase bearing inspection, cylinder block wear, piston diameter, cylinder head flatness, spring valve outer and spring valve inner, valve, rod kit gap, piston pin, rocker arm and wear, and valve spring seat inspection. As a result of the overhaul carried out, there are components that have exceeded the standard specification limit of the component, so it is necessary to replace the components that have exceeded the standard limit with components that meet the standard, so that the engine can return to the specification standard and can drive the Honda supra fit new motorcycle.

Corresponding Author:

Albert Kasman
Akademi Teknologi Bogor
Email: albert.kasman.rec@gmail.com

INTRODUCTION

Overhaul is a part of preventive maintenance that is carried out when a machine or equipment has been used for a certain period of time or reaches a certain number of operating hours and includes larger repairs such as replacing components or repairing systems. Overhaul is the process of overhauling an engine or other problematic parts to be examined more thoroughly. Replacement of problematic engine components is also carried out in the overhaul process. Overhaul is a heavy service that is carried out on the vehicle engine if it is damaged due to prolonged use.

Based on the meaning of the overhaul, it can be concluded that this heavy service is necessary if the inside of the engine is damaged. In carrying out an overhaul, there are several things that must be considered. First, what must be done is to disassemble and repair the components on the damaged machine. Second, replacing and reinstalling components properly is also mandatory in overhaul.

Problem Formulation

1. What are the proper procedures and steps in overhauling a new supra fit engine
2. What are the main components that need to be considered during the process of overhauling a new supra fit new engine

Research Objectives

1. Develop the right procedures and steps in overhauling a new supra fit engine
2. Analyzing the main components that need to be considered during the process of overhauling the new supra fit new engine

THEORETICAL FOUNDATIONS

Definition of Overhaul According to Adhinata (December, 2014), the definition of Overhaul is work that detects malfunctions and restores functions through engine removal/disassembly, differentials, and adjustment, repair or replacement of parts as needed.

Firdikarini (March, 2014) the definition of Overhaul is a term that is often used when heavy equipment is experiencing engine downtime. A tool that is often used, of course, the engine in it will experience a decrease in performance or performance. If this happens, it can make the work results imperfect or optimal.

Based on the two opinions above, it can be concluded that, engine overhaul or better known as the engine process is down. The definition of overhaul is an activity of dismantling a damaged engine by following a standard dismantling procedure with a sequence of inspections either visually and then identifying for the target of dismantling or replacing components that can no longer be used, which aims to improve engine performance at maximum condition. Definition of Overhaul Overhaul is a term that is often used when heavy equipment is experiencing engine downtime. A tool that is often used, of course, the engine in it will experience a decrease in performance or performance.

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Overhaul is a process or event that must or must be done by disassembling an engine and re-inspecting it. The purpose is to improve the performance of a machine or a process of rejuvenating a tool or component as an effort to restore the performance condition of the tool or component as it was originally in accordance with factory standards. Overhaul can also be interpreted as the remanufacturing process, which consists of several main sub-sub-works such as dismantling, cleaning, measuring, repairing, rebuilding and testing. Based on the type of overhaul, overhaul consists of semi overhaul and full overhaul. Semi overhaul is the dismantling of the engine that is carried out only

Types of Overhoul

Based on the type of overhaul, overhaul consists of semi overhaul and full overhaul. Semi overhaul is the dismantling of the engine which is carried out only half of the engine part so that there is no need to lower the engine. While full overhaul is a disassembly carried out on all parts of the engine so that it requires engine downturning.

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RESEARCH METHODOLOGY

The method in this study is to use an experimental method, namely: Collecting data on the results of motorcycle engine overhaul on pistons, carburetor repair kits, and timing chains Collecting data on maintenance data carried out on motorcycle engines that are overhauling on the engine by measuring the looseness of the cylinder liner and piston.

Tools and Materials

Table 1. Tools and Materials

No	Tool Name	Information
1	Combination Pliers	To Clamp or Hold Objects
2	Hammer	To Hit the Getok Screwdriver
3	Ring Lock	To Unscrew the Exhaust Bolt and *Bustep* Bolt (Step On)
4	Trecker Magnet	To Pull Out the Magnet on the Motor Engine
5	Shock Lock 17	To unscrew the magnetic bolt on the motor engine
6	Lock Stel Valve	To adjust the valve/ Rocker Arm
7	Feeler Gauge	To adjust the rocker arm
8	Tap Screwdriver	To open the Timing Chain lid
9	Spark Plug Lock	To open the Spark Plug
10	Tang Cirlip	To grab snaprings or cirlips
11	Crown Lock	To unscrew the bolt of the Coupling housing
12	Washbasin	For a place to put the
13	Valve Lid Lock	To open the valve lid
14	Compressor	To clean deep dust Air Pilter
15	Paintbrush	To clean the appliance
16	Wire Brush	To descale the machine
17	Amril	To clean the Valve
18	Petrol	To clean the machine
19	T Lock	To open the engine block
20	Wooden Beams	For the position of the machine
21	Dry Cloth	To wipe/clean on the machine
22	Screwdriver (-+)	To tighten and loosen the bolt with the same head as the tip.

Testing

Testing the overhaul process is carried out on engines that lack power and the age of the motorcycle engine that has aged can cause less than perfect oil lubrication so that it emits white smoke on the exhaust, the accumulation of carbon dirt on the piston walls which makes the piston rings looser. The first process carried out is to diagnose the overhaul and then carry out an initial inspection and cleaning of spare parts that have been damaged or are not suitable. After the damage to the spare parts is known, replace the spare parts and repair the spare parts on the problematic motorcycle engine after everything is installed, then conduct a test test on the motorcycle engine whether it is normal in excellent condition.

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RESULTS AND DISCUSSION

Causes of Overhaul

Before overhaul, we need to know the correct sequence of work steps so that at the time of overhaul can get maximum results before repairing an engine. First we recognize the initial condition of the engine before overhaul. This can be done by heating the engine and testing it with a compression test, so that the symptoms of damage can be known. It is necessary to pay attention to the condition of an engine, including the messin sound, the color of the exhaust gas and the compression of the engine. Please note that overhaul is only carried out if the engine has problems such as lack of power in the engine, carburetor error, noise on the left crankshaft, discoloration of exhaust gases, white smoke in the exhaust, and lack of compression when doing a compression test.

Identify the Cause of Overhaul

Start by opening all the necessary parts including removing the body, fuel tank, and other components that are blocking engine access. Then remove the wheels and front suspension if needed to get better access, and don't forget to dispose of the oil in the engine. Furthermore, the initial examination which includes:

1. Check the general condition of the machine to identify obvious damage and wear on the machine
2. Measure compression pressure to evaluate cylinder condition
3. Check vital parts such as pistons, piston rings, and crankshafts for damage.

Proses Overhaul

Before overhaul, we need to know the correct sequence of work steps. In order to get maximum results during overhaul Before repairing an engine, we first recognize the initial condition of the engine before disassembling. This can be done by heating the engine and testing it with a compression test.

CONCLUSION

Based on the results of analysis and research on 500 watt capacity solar PV, it can be concluded that this solar power plant produces an open voltage with an average of 18.66 Volt DC. Based on voltage measurement data, the AC voltage value that can be produced is relatively stable with an average of 218.4 VAC 50 Hz and is able to withstand a load of 313 watts for 2 hours and 15 minutes. This solar power plant can charge the battery from empty to full for 16 hours, the battery charging time is 35 Ah long because this solar power plant uses a 30 Wp solar panel. It is necessary to pay attention to the condition of an engine, including engine noise, exhaust gas color and engine compression.

Comparison of engine test results after overhaul with standard specifications of Honda supra fit new motorcycle engines. By carrying out an overhaul, the engine power of the new supra fit new motorcycle increases by 32% where the standard engine power of the new Honda supra fit is 7.29 ps/8000 rpm while after the overhaul is carried out to 9.67 PS/8000 rpm, according to the inspection, component replacement and testing carried out when overhauling the new supra fit new motorcycle engine can return to work optimally.

Suggestion

Before testing the supra fit nuw motorcycle engine, make sure the installation of the engine is in accordance with the standard. To carry out routine services carried out at 1000 kilometers are as follows:

1. Change the engine oil according to the standard
2. Valve adjustment according to the standard
3. Piston Ring and Piston Replacement as standard

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