

Project on Pulsar 150 CC Engine Modifications for Race Purpose

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ABSTRACT

The Bajaj Pulsar is the ultimately popular 220 cc. The Baja pulsar 135/150/180/220cc are depended on the previous design which has been in motorbikes owned by Bajaj Auto situated in India. Currently there are eight unique variants available, with engine capacities of 125 cc, 150 cc, 160 cc, 180 cc, 200 cc, and production since its development in 2001, while the Pulsar 160/200 cc are based on a platform. It was mention that they make a Pulsar 200 dts-i which was in production for a small period of time. In 2012, it was marked the introduction of the all new Pulsar platform and the Pulsar 200NS was showcased. However, the production of Bajaj Pulsar 200NS was then discontinued (redeveloped in early 2017 with the all new norms of BSIV and was named as 200NS). The average month sale was around 86,000 units in 2011, Pulsar developed a 2011 market share of 47% in this segment. By the time of April 2011 a 5 million units were sold. In 2018, Bajaj auto celebrated a total sale of over 10 million units of their all new bike and were set on a path that the predetermined.

Keywords: Pulsar, engine, motorcycles, IC.

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INTRODUCTION

The internal combustion is an engine type that follows the conversation of the chemical energy in the new useful mechanical energy that can be used to the vehicle driving force. In an IC engine, combustion chamber is an integral part of the fuel as the working fluid in the circuit. The Indian market was then shifted towards the motorcycle trend of fuel efficient, small capacity motorcycles. Larger motorcycles with bigger capacity virtually did not occur. The launch and succession of Hero Honda CBZ in 1999 showcased that there was desire for performance bikes. Bajaj took the clue from there on and developed the Bajaj Pulsar twins, i.e., 150cc and 180cc in India on November 24, 2001. Since the development and success of Bajaj Pulsar, Indian youth got fond and began the

expectation for high power and other features from economical motorcycles. The project faced internal resistance, preserve by McKinsey & Company and doubts on its effects on Bajaj's and Kawasaki's relation. The project took approximately 36 months to complete and cost Bajaj ₹1 billion (Figure 1) [1].

PROBLEM STATEMENT

When the first engine introduced a performance check was conducted. It was found out that the power and torque of the engine that was tested i.e. the Pulsar 150cc engine were the company provide with. The specification introduced were not satisfactory and needed to be enhanced so we were needed to make changes to this specification by some modification that were performed on this engine [2].

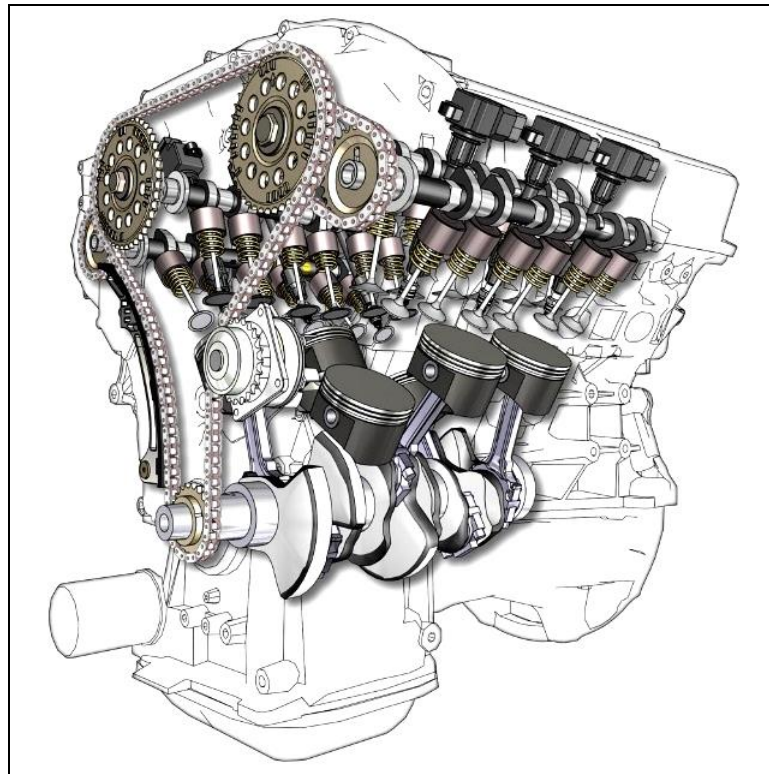


Fig. 1. Bajaj pulsar engine.

The weight of the engine was checked. It was found out that its weight was greater than that we required, and some needful performances changes we required [3].

EXISTING SYSTEMS

Engine Type: Single Cylinder, 4-Stroke, 2-Valve, Twin Spark, DTS-i Engine
 Displacement: 149.5 cc
 Max Power: 14ps@8000 rpm
 Max Torque: 13.4@6000 rpm
 No. of Cylinders: 1
 Cooling System: Air Cooled
 Valve Per Cylinder: 2
 Fuel Supply: Carburetor
 Clutch: Wet, Multi Plate
 Transmission: Manual
 Gear Box: 5 Speed.

OBJECTIVES

To increase the performance of the engine we went through some modification in our engine and carburetor and tried to increase its power and torque without affecting the efficiency. Also, its weight was more than

what we pre-planned or imagine it to be so we needed to perform some modification on its engine to reduce its weight. We eliminated the parts that were not required by us like the kick pedal and kick shaft. The third problem that we faced was that of the vibration on the engine and chassis. So, we got the PU material which was used as a damper for the purpose of reducing or eliminating the vibration issue [4–5].

PROBLEM SOLUTION

The weight was needed to be reduce to achieve the speed by the bike that was required for race purposes. We went through many changes and modification on this matter to get the weight reduced at the required weight. While mounting we got to know that the engine was causing many problems due to vibration. This was not required for our sports bike and needed to be eradicated for the race purpose. We went through modification in our bike and even on the engine to overcome this problem and got the vibration to be eliminated or minimize. The vibrations

were to be reduced and the bike could achieve its purpose.

CONCLUSION

In this study that we conducted, we found out that the engine modification of the Bajaj Pulsar 150cc engine result in the increase in the performance of the engine by increasing its power output to a desired level that was required by us. However, this result in the more fuel consumption that is required for the desired output i.e. The performance of the engine was increased. However, this may result in lowering of the life of the engine as the engine would not be suitable for longer use. This type of engine will only use for race purpose and not day to day use purpose for commute or of that purpose

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