The Effect of variation in the Number of Holes in the Inner Pipe Diameter on Noise Levels and Performance of 4-Stroke Internal Combustion Engines

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ABSTRACT

The exhaust is a noise dampening device on a vehicle. The exhaust is designed in such a way that the sound it produces is not too loud. One way to reduce noise due to exhaust gas discharge through the exhaust is by changing the number of holes in the silencer inner pipe. The purpose of this study is to determine the impact produced when making variations in the number of holes in the silencer inner pipe on the vehicle noise level and engine performance. The method used is the experimental method. The results of the study show that the more the number of silencer holes in the exhaust, the more effective it is in reducing noise, the average noise value of many holes is 68.2 dB compared to few holes of 68.3 dB. The more the number of silencer holes, the better the power value or top speed produced, the more holes allow exhaust gas to exit faster, reduce back pressure, reduce resistance so that at high speed the engine reaches maximum power or top speed. The fewer the number of silencer holes, the better the torque value, the fewer holes allow exhaust gas to exit slower, high back pressure can maintain a more optimal fuel and air mixture at low speed so that the torque value increases. The average torque value of the large hole is 4.13 Nm compared to the small hole 4.70 Nm and the average power value of the large hole is 8.52 Hp compared to the small hole 7.87 Hp.

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