

ANALYSIS OF THE EFFECT OF PWK AND PE CARBURETOR SLIDE TYPES ON AFR (AIR FUEL RATIO) IN A 130 CC BORE-UP MOTORCYCLE ENGINE

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ABSTRACT

Bore-up modifications to motorcycle engines are intended to improve performance, but often neglect the balance of the air-fuel mixture (Air-Fuel Ratio/AFR). An incorrect AFR can cause knocking if the mixture is too lean, or fuel waste and carbon buildup if it is too rich. This study aims to analyze the effect of carburetor slide shape on the AFR in a 130 cc bore-up motorcycle engine. The difference between the flat slide on the PWK carburetor and the round slide on the PE carburetor affects airflow characteristics and fuel atomization. The research method used was a comparative experiment on a Honda Supra X 125 engine that had been bored up to 130 cc. AFR measurements were taken using a wideband O₂ sensor across the engine speed range from idle to maximum. The results show that the PWK carburetor produces a mixture that tends to be richer at high RPMs with an average AFR of 11.73, while the PE carburetor provides more stable results closer to the ideal (stoichiometric) ratio with an average AFR of 12.65 at RPMs above 8,000. This proves that the round-slide design of the PE carburetor is superior in maintaining mixture stability, whereas the flat-slide design of the PWK carburetor is more responsive in rapidly supplying large amounts of fuel.

Keywords: carburetor, AFR, PWK, PE, bore-up