

***ANALYSIS OF DIMENSIONAL VARIATION OF INTAKE VELOCITY STACK ON
PERFORMANCE AND EXHAUST GAS EMISSION IN A
4 STROKE 150 CC FUEL INJECTION ENGINE***

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ABSTRACT

This study aims to analyze the effect of velocity stack length variations on performance and exhaust emissions on a Honda Supra GTR 150 motorcycle. Three length variations used are 35 mm, 55 mm, and 75 mm, compared to the standard intake system. The test results show that the use of a velocity stack can improve engine performance. The 75 mm velocity stack produces a maximum power of 18.38 HP at 10,000 rpm, higher than the standard intake which only reaches 13.93 HP. Meanwhile, the standard intake produces a torque of 13.62 Nm at 7,000 rpm, but the velocity stack configuration provides peak torque at higher revs. In emission testing, the 35 mm velocity stack showed the best results with CO of 1.78% and HC of 392 ppm, which are below the established emission threshold. The results of this study prove that variations in the length of the velocity stack affect combustion efficiency and engine performance, and can help reduce exhaust emissions.

Keywords: *Velocity stack, standard intake, engine performance, exhaust emissions, fuel injecton.*