ANALYSIS OF VARIATIONS IN DISC DIAMETER ON FRICTION MOMENT, DISTANCE AND BRAKING TIME ON A MOTORCYCLE

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ABSTRACT

This research aims to analyse the effect of disc diameter variation on friction moment, braking distance, and braking time on Supra X 125 motorcycle. The method used in this research involves testing three variations of disc size, namely 220 mm (standard), 260 mm, and 300 mm, with speeds of 20 km/h, 30 km/h, and 40 km/h. The test results show that the larger the disc diameter, the higher the friction moment generated. The test results showed that the larger the disc diameter, the higher the friction moment generated. In the 300 mm disc, the highest friction moment value was recorded at 7246,1 N.m. In addition, the shortest braking distance was found in the 300 mm disc, which was 9.5 metres at 20 km/h, 30 km/h = 18.20 metres, 40 km/h = 27.2 metres. The braking time also shows a similar pattern, where the 300 mm disc has the shortest braking time of 3.63 seconds at a speed of 20 km/h, speed of 30 km/h = 5.52 seconds, speed of 40 km/h = 6.35 seconds. From the results of this study it can be concluded that the use of discs with larger diameters increases the effectiveness of braking by shortening the distance and time of braking and increasing the moment of friction. This shows that variations in disc size have a significant effect on motorcycle braking performance.

Keywords: Disc, friction moment, braking distance, braking time, motorcycle