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Analysis of Bolt Loosening due to Transvers Vibration

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Abstract: *Bolt loosening is a critical issue in engineering applications where vibration-induced failures pose significant risks to the structural integrity and functionality of mechanical systems. This project aims to investigate the phenomenon of bolt loosening resulting from the transfer of vibrations and develop effective strategies to mitigate this problem. The study employs a comprehensive approach, combining experimental analysis, numerical simulations, and theoretical modeling to gain insights into the underlying mechanisms of bolt loosening. Furthermore, a theoretical model is developed to predict the susceptibility of different bolted joints to loosening based on factors such as material properties, bolt size, and tightening torque. The model is validated using experimental data, ensuring its accuracy and reliability in practical applications.*

Keywords: Bolt Loosening, Experimental Analysis, Theoretical Modeling, Vibrational Behavior