The studies on engine mounting system of vehicles

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ABSTRACT

Engine mounting system on the vehicle reduces the vibrations of the engine to the frame. The optimal of design engine mounting system can reduce the noise and vibration of the vehicle ; increase the ride comfort during driving. First, according to the layout patterns and vibration isolation theory, the analytical and coordinate system are built. By using the Lagrange's equation, the mathematical model of the vibration isolation system can be established. The system natural frequencies, engine mount forces can be calculated from the mathematical mode. Second, by the frequency ranges and the objective functions,the system can by analyzed. The MATLAB optimization program is used to optimize the stiffness of engine mounts. The modal analysis medthod is used to calculate the dynamics of the with optimal stiffness parameters to varify the isolation effects.

Keywords : Vibration isolation system、Engine mount、natural frequencies、optimization

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