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Abstract
This thesis studies influence of spring and damper of suspension system on the vibration of vehicle ride. Test procedure to measure spring coefficients and damping coefficients of adjustable springs and shock absorbers are explained in detail. For road test we install four sets of adjustable spring and damper modules and change the values of spring stiffness and damping coefficient comparing the original setting of the car under the same tire pressure, load, shift, and road. Then we use handhold vibration and noise analyzer together with accelerometer to measure mean acceleration level of vehicle vibration under different speeds. From the test data we conclude the influence of spring stiffness and damping coefficient on the vehicle vertical vibration.
We also find that the lager damping of the damper and the smaller tire pressure are not necessarily good for riding. The damping of the damper and tire pressure need to be cooperated with the spring stiffness of suspension system. Otherwise, the lower tire pressure may cause the higher acceleration. The experimental method as well as test data in this research can be used as reference for computer simulations and chassis design of cars.
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