Suppression of Vertical Vibration of Railway Vehicles by Damping Control of Secondary Vertical Oil Damper

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To improve ride comfort of railway vehicles running on the track with large irregularity, the suppression of vertical rigid-body-mode vibration is important. For suppressing this vibration, the secondary suspension damping force control system with variable vertical damper is being developed. This paper reports the results of running test carried out applying this system to meter-gauged railway vehicle. The control algorithm which controls variable damper is based on sky-hook control theory. The results of vehicle running tests on the local line demonstrate that this system can reduce PSD peak value of vertical vibration acceleration in the rigid body mode to about 20 % , and can also reduce the bending mode vibration of car body simultaneously.