Improvement of Lateral Riding Comfort of Railway Vehicle by Applying Centering Actuator

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To improve lateral riding comfort of vehicles, we have considered applying a pneumatic actuator which has a displacement dependent control valve. The valve installed on the actuator rod controls force of the actuator generated depending on the displacement caused according to the relative displacement between the vehicle body and the bogie. This control makes us possible to keep the vehicle body at around neutral position. We have installed the actuator on a test vehicle. The result of the running test shows that we could decrease impact caused by hitting against the lateral bump stop. Decreasing impact which arises by hitting against the lateral bump stop leads to reducing lateral vibrational acceleration of the vehicle, and results in improvement of riding comfort. It can independently work only by supplying compressed air. There is no need for equipping the actuator with electrical sensors and control devices to use it. The size of the actuator is almost the same as that of the lateral damper. For this reason, the actuator is easily applicable to the existing vehicles.