

Pneumatically Operated Floating Brake Calliper for Shinkansen Vehicles

Yasushi KARINO

A calliper is a device that pinches brake discs with any given force to create braking force. RTRI has developed a pneumatic floating calliper that is endowed with simplicity and outstanding maintainability without requiring the use of a pneumatic-hydraulic conversion device (i.e. a booster cylinder) and is interchangeable with the existing lightweight and compact hydraulic calliper used on Shinkansen vehicles. It is further possible to configure it with the same size as a hydraulic calliper. Testing on a braking test bench has verified that the pneumatic floating calliper offers a level of brake performance equivalent to that of the hydraulic calliper, and that the increase in temperature of the diaphragm can be suppressed to a level that does not adversely affect its lifespan thanks to the adiabatic piston arranged between the diaphragm and the brake lining.