

## Lessons Learned from a Fatal Crash

### **Truck Air Brake Warning: Manually Adjusting Automatic Slack Adjusters is Dangerous, Can Lead to Deadly Consequences**

Safety officials are warning hundreds of thousands of heavy truck operators, drivers, mechanics, and federal and state commercial vehicle inspectors about the dangers of manually adjusting automatic slack adjusters on vehicles equipped with air brakes.

National Transportation Safety Board (NTSB) Acting Chairman Mark V. Rosenker bluntly warned: "Manually adjusting automatic slack adjusters is dangerous. It should not be done, except during installation or in an emergency to move the vehicle to a repair facility." He emphasized that manual adjustment of this brake component masks the real reason why the brakes are not maintaining adjustment, giving the driver a false sense of security about the effectiveness of the brakes, which will likely go out of adjustment again soon. It also causes abnormal wear to the internal adjusting mechanism for most automatic slack adjusters, which may lead to failure of this brake component.

The warning comes as a result of an NTSB investigation into a fatal runaway dump truck accident in Glen Rock, Pennsylvania, that has shown the deadly consequences of improper maintenance of automatic slack adjusters for air brake systems. In the April 11, 2003, accident, a dump truck was traveling on a steep downgrade when the driver found he was unable to stop the truck. The truck struck four passenger cars, one of which struck three children who were on a nearby sidewalk. A driver and an 11-year-old child from one of the passenger cars were killed.

The NTSB concluded that the mechanics who worked on this truck did not look for underlying problems with the slack adjusters or other brake components. They misdiagnosed the brake problems, probably because they were not properly trained on the function and care of automatic slack adjusters and how they relate to foundation brake systems. Consequently, they repeatedly manually adjusted the automatic slack adjusters, a dangerous practice. The NTSB has seen similar actions from a driver who worked on a truck involved in a similar accident investigated recently in El Cerrito, California.

"The warnings in existing materials available to owners, drivers, mechanics, and inspectors of air-braked vehicles equipped with automatic slack adjusters have not been successful in communicating the inherent dangers of manually adjusting automatic slack adjusters to correct out-of-adjustment brakes," the NTSB said.

Even organizations that specialize in truck maintenance and repair often give out wrong or inadequate information on automatic slack adjusters. During the probe into the Pennsylvania accident, investigators found that several private study guides of the ASE's truck brake test inadequately cover the maintenance of automatic slack adjuster-equipped brakes, and some contain incorrect information. NTSB said one study guide wrongly states, "Automatic slack adjusters may require periodic adjustment." The NTSB is concerned because many mechanics

use the study guides as a source of general maintenance information as well as for test preparation. “It is imperative that these guides contain thorough and accurate information about automatic slack adjusters,” said Rosenker.

The NTSB said many truck operators, who do not consider themselves motor carriers and have very little or no interaction with safety regulators or trucking organizations and associations, must be alerted to the problem. These vehicles are used by a diverse cross-section of operators, including fire departments, landscaping companies, school bus operators, general contractors, and even vacationers who have large recreational vehicles.

In addition, the NTSB investigation found that lack of knowledge and skills in operating air-braked vehicles played a role in the accident. The 21-year-old driver of the dump truck had been on the job for less than two weeks and had never driven an air brake–equipped vehicle before joining the company. He received no training on how to drive an air brake–equipped vehicle—an important failure because air brakes on trucks operate differently from hydraulic brakes on passenger cars. The rear brakes on the truck were out of adjustment and provided little or no braking force. The driver pumped the brakes, reducing the capability of the front brakes and exacerbating the loss of braking capability in the out-of-adjustment rear brakes. Until recent widespread use of antilock brake systems (ABS) brakes, drivers of hydraulically braked vehicles (passenger cars, SUVs, pickups and other light-duty trucks) were taught to pump their brakes in emergencies. But in an air-braked vehicle, pumping the brakes depletes the air pressure, thereby drastically reducing the brakes’ capability.

The NSTB estimates there are in excess of 8 million vehicles on the road equipped with automatic slack adjusters as every large truck built since 1994 has been required to have them. Many of these vehicles may be operated by drivers who have no air brake training and may not be able to operate their vehicles safely. “This situation needs to change, and change quickly,” said the acting NTSB chairman.

The NTSB found that the probable cause of the accident was the lack of oversight by the vehicle’s owner, which had resulted in an untrained driver improperly operating an overloaded, air brake–equipped vehicle with inadequately maintained brakes. Contributing to the accident was the misdiagnosis of the vehicle’s underlying brake problems by mechanics involved with the vehicle’s maintenance. Also contributing was a lack of readily available and accurate information about automatic slack adjusters and inadequate warnings about safety problems caused by manually adjusting them.

The NTSB issued a series of safety recommendations to address training or regulations concerning air brake–equipped vehicles, to the Federal Motor Carrier Safety Administration, State governments, the Commercial Vehicle Safety Alliance, automatic slack adjuster manufacturers, manufacturers of vehicles equipped with air brakes, the National Institute for Automotive Service Excellence, and several publishers of study guides.

A full accident report may be found on the Board’s Web site, [www.nts.gov](http://www.nts.gov), under *Publications, Highway*.