
Ultrasonic Testing for the Maintenance of Commercial Vehicles

by CTRL Systems, Inc.

Like other industries, the global transportation industry has changed much in the past 15 years through the implementation of high-tech equipment. New technology allowing time-specific delivery and electronic tracking of cargo has been at the forefront of the growth. The technology for the maintenance of vehicles to maximize transportation efforts has been growing as well. A transportation company cannot afford to have trucks break down or to be pulled from the road by state safety inspectors.

CTRL Systems, Inc. in Westminster, MD manufactures an ultrasonic device, the CTRL UL101 (UL101), which enables the transportation company to take control of its vehicle maintenance and safety problems. The UL101 has many vehicle maintenance applications including the inspection of air brake lines, valves, tires, cooling and exhaust systems, wheel bearings, drive train bearings and gears, hydraulic systems, and even electrical systems.

The UL101 provides the technician the ability to hear ultrasound waves emitted at the 40,000 Hz level. These waves, which are outside the normal range of human hearing, are translated into familiar, readily distinguishable audible sounds. An air leak sounds like an air leak, a bearing sounds like a bearing, electrical arcing sounds like electrical arcing, etc. The ultrasound produced by the component under test provides instantaneous information on the component's current operating condition. Because problems such as under-lubrication or scratches on bearings emit ultrasound before the problem becomes audible, early diagnosis of potential or existing problems can be made.

Airbrake leaks put hundreds of vehicles out of service each day. The most recently publicized data regarding the inspection of brake systems took place on September 5, 2001 as part of Operation Air Brake. Brake systems were inspected in 11,294 vehicles during 16 hours of roadside checks. Brake related defects caused a total of 2,009 vehicles (17.8 percent) to be placed out of service. Seventy five percent of the defects were for brake adjustment problems. The September 2000 roadside check took 16.7 percent of the 8,912 vehicles inspected out of service.¹

Many times, trucks develop leaks in the brake lines. Although one leak may not cause a problem, many leaks can cause the truck to be unable to maintain pressure during a drop-down test. Fines vary from State to State, but failure to maintain pressure costs companies thousands of dollars per year plus lost time for delivery. Airbrake leaks are easily identified and pinpointed with ultrasonic technology, even when they do not produce an audible noise or are in hard-to-reach locations. With the UL101, a technician could scan the brake line within minutes to quickly detect and pinpoint leaks. Leaks can then be repaired and re-tested with the UL101.

Whether for normal vehicle maintenance or DOT inspections, the UL101 is an invaluable tool for monitoring the condition of critical vehicle components and helping to make the road a safer place. There is no more guessing involved by sticking your ear to the screwdriver. There are no more surprises at inspection points. The technology is available today to improve current practices.

¹ News Release: available April 10, 2002 http://www.cvsa.org/CVSA_Main/Operation_Air_Brake/operation_air_brake.html