

## Issues & Trends

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### **Rust Jacking in the Heavy-Duty Market: Understanding What It Is and What Is Being Done**

Rust jacking has recently become a widely discussed topic in the trucking industry. In order to understand how to combat rust jacking, it is important to know exactly what it is, how common a problem it has become and what is being done about it today.

#### **What is Rust Jacking?**

Rust jacking occurs when rust forms on the brake shoe table under the lining causing the lining to lift and crack. In addition, it can cause the shoe to deteriorate. Common industry maintenance practices show that a shoe and lining assembly could be rust jacked if all of the following conditions exist:

- There is at least 1/8" of usable brake lining remaining above the rivet heads (3/8" total lining remaining)
- The lining is lifted off the shoe, resulting in a gap between the shoe table and the bottom of the lining block
- The lining block is cracked along the edge as shown in Fig. 1



Figure 1

## What is not Rust Jacking?

There are many conditions that are often incorrectly interpreted as rust jacking:

- Cracks on the braking surface of the lining block
- Edge de-lamination without obvious lifting of the block from the brake shoe table
- Lining cracks that occur when the lining is worn down to the rivet heads

## How does Rust Jacking Occur?

The formation of the oxide rust layer is created by corrosive elements and moisture getting under the lining block causing the shoe table to corrode. The formation of this ferrous oxide layer and its growth causes the lining block to be pushed away from the shoe table. Since the rivets hold the block tightly to the table, the result is cracks in the block near the rivets. Several factors influence this process, including: vehicle duty cycle, geographic region of operation, quality of the brake shoe table paint process and other on road chemical compounds.

In recent years, several states have adopted the use of new winter road solvents. These road solvents are liquid, and can contain sodium, magnesium or calcium chloride. There have been reports of increased corrosion of vehicle components when subjected to road wash containing these new road solvents.

## How Big Is the Problem?

The scope of rust jacking as a brake problem still has not been determined. The Society of Automotive Engineers and the Technology & Maintenance Council

(TMC) of the American Trucking Association, continue to study rust jacking and have made no official recommendations to manufacturers and users. TMC has asked states that use the liquid road solvents to consider re-formulating the solvents and has offered to help in the re-formulation.

Brake engineers for component suppliers like ArvinMeritor, have been studying corrosion and rust jacking for years and are continually looking for the best ways to prevent these problems. Recent studies have shown that rust jacking occurs on a limited basis (see Sidebar Study).

### Sidebar Study

In 2002 and 2003, ArvinMeritor inspected nearly 50,000 lined brake shoe cores for potential rust jacking at its Plainfield, Ind., reman shoe center. In addition, one of ArvinMeritor's friction suppliers conducted its own independent inspection of more than 20,000 lined brake shoes cores. Collectively, the incidence of potential rust jacking was found in approximately one percent of shoes inspected.

## Rust Jacking Solutions

Studies have shown that current methods of protecting brakes against this problem are adequate.

### ***ArvinMeritor's Strategy on Rust Jacking***

*At ArvinMeritor, we will continue to use the epoxy E-Coat painting process to protect new Original Equipment (OE) brake shoes against corrosion. This epoxy E-Coat paint process electronically deposits premium epoxy paint onto the brake shoe. Paint is pulled into difficult to reach areas and small crevices. It is evenly applied to an optimized thickness. This state of the art process provides superior protection against harsh environmental conditions, including road solvents. The epoxy E-Coat paint process for OE brake shoes started in production at ArvinMeritor in January 1992 and it is a tested, proven technique that ArvinMeritor stands behind.*

*ArvinMeritor's Commercial Vehicle Aftermarket (CVA) established a brake shoe remanufacturing center in Plainfield, IN. The remanufacturing process was designed and implemented from the start to produce the highest quality brake shoes possible.*

*Due to the high-quality of our remanufactured brake shoes and the low incidence of rust jacking found at the Plainfield facility, we are confident our current process provides adequate corrosion protection.*

For more information on this topic, or for copies of other Issues & Trends, contact ArvinMeritor Marketing Communications at 248/435-1933, fax your request to 248/435-9946, e-mail [david.pennington@arvinmeritor.com](mailto:david.pennington@arvinmeritor.com), or visit our web site at [drivetrainplus.com](http://drivetrainplus.com)

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