

*The authoritative guide to reducing commercial tire expenditures from
Pressure Systems International,
the manufacturer of the Meritor Tire Inflation System by PSI™*

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Preventing Tire Sidewall (Zipper) Rupture



Courtesy of the TMC
Radial Tire Wear
Conditions Analysis Guide

MTIS™ will be featured at the ArvinMeritor Booth (#104) at the IANA Intermodal Expo being held November 10-13 at the Georgia World Congress Center in Atlanta.

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We all know how important it is to maintain proper tire inflation pressure to:

- Maximize fuel economy
- Maximize tire removal mileage
- Minimize irregular tire wear
- Maximize retreadability
- Reduce roadside service calls

But a potentially dangerous condition can develop when radial tires run with little or no air for an extended period of time. This condition is technically called a circumferential upper sidewall rupture. The more common name is a "zipper break" or "zipper rupture".

To understand this condition, think of the individual steel wires running through the sidewall as "paper clips". When a tire is running the recommended pressure, those wires are in tension. But if a tire runs significantly under inflated (with little or no air) for an extended period of time those wires or "paper clips" are no longer in tension. In this condition, the tire sidewall will flex significantly more than normal as the tire now rotates underinflated and overloaded. What happens if you keep bending a paper clip? It will eventually break. The same analogy holds true here. The sidewall wires will continue to weaken as the tire runs with little or no air (inside duals are especially prone to this condition).

After the retread process is when extra caution is required.

It is very difficult to determine if a radial truck tire ran with little or no air for an extended period of time. Even if the tire is inspected before and after retreading, there is no guarantee that the technician can determine if the tire ran significantly underinflated for a long period of time. Tires that have those weakened wires in the sidewall are the suspect tires that have the potential to experience a zipper

rupture.

Caution is required during the inflation process.

If a tire is going to zipper, it will occur when the tire is remounted and inflated before going back into service, either as a new tire that had a puncture repair or as a new retread.

A safety cage is absolutely required when inflating a truck tire.

If a zipper rupture occurs, you want it to happen inside the cage, otherwise people can be injured. As an added precaution, tires should be 20% overinflated inside the safety cage to insure that if the tire is going to rupture, it will do so INSIDE the cage.

The Rubber Manufacturers Association publishes a wall chart that explains the proper procedure when inflating tires along with the procedure for checking tires for possible zippers. Contact the RMA at www.rma.org to order your wall charts. Or you can call the RMA at 800-325-5005 X-242 and order: Publication 33#2 23/95 "Inspection Procedures for Identification of Potential Zipper Ruptures in Steel Cord Radial Medium & Light Truck Tires plus Wall Chart".

Remember air inside the tire is what carries the load

- Running underinflated with little or no air for an extended period of time will cause severe sidewall deflection, generate a high amount of heat, and the sidewall wires may become weakened.

- To prevent possible zipper ruptures occurring when a tire is put back into service because of a puncture or as a retread, always inflate the tire in a safety cage and follow all safety precautions.

- Using automatic tire inflation systems to insure that your tires are always running at recommended tire inflation pressure is one approach to significantly reducing zipper ruptures from occurring at your fleet.