

2019-03 – Evolving Commercial Vehicle Tire Design Tread Depth Measurement Inspection

Created: Sept. 26, 2019

Summary

This Inspection Bulletin explains how to properly measure tread depth of commercial motor vehicle tires that utilize evolving tread designs.

An accompanying Inspection Bitz, which is a one-minute informational video, is available at www.cvsa.org/videos, through the CVSA member portal at www.cvsa.org/memberportal and via the CVSA Out-of-Service Criteria app.

Background

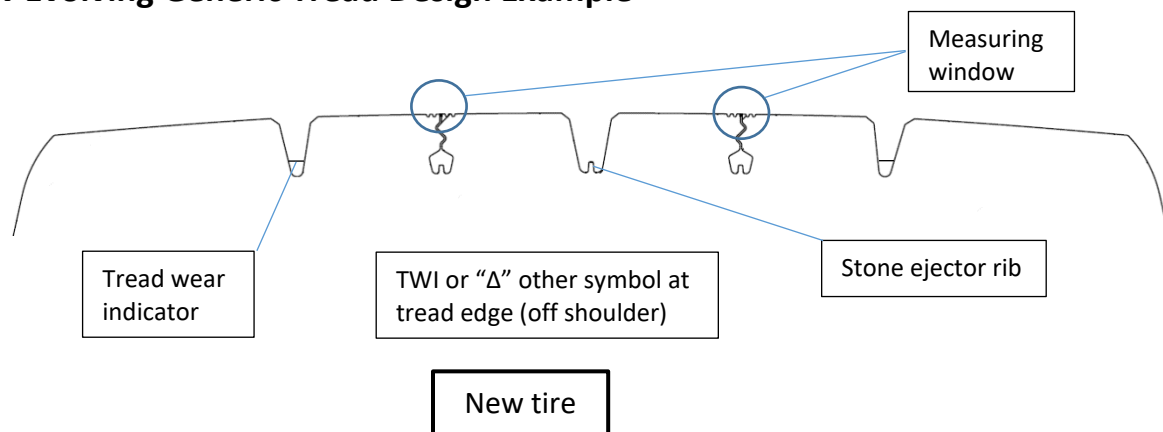
The North American Standard Out-Of-Service Criteria, Part II, Item 12. Tires a. states that any tire on a front steering axle(s) of a power unit is out of service when a tire has:

- (1) a tread depth of less than 2/32 inch (1.6 mm) when measured in any two adjacent major tread grooves (typically any groove containing a tread wear indicator) at any location on the tire.

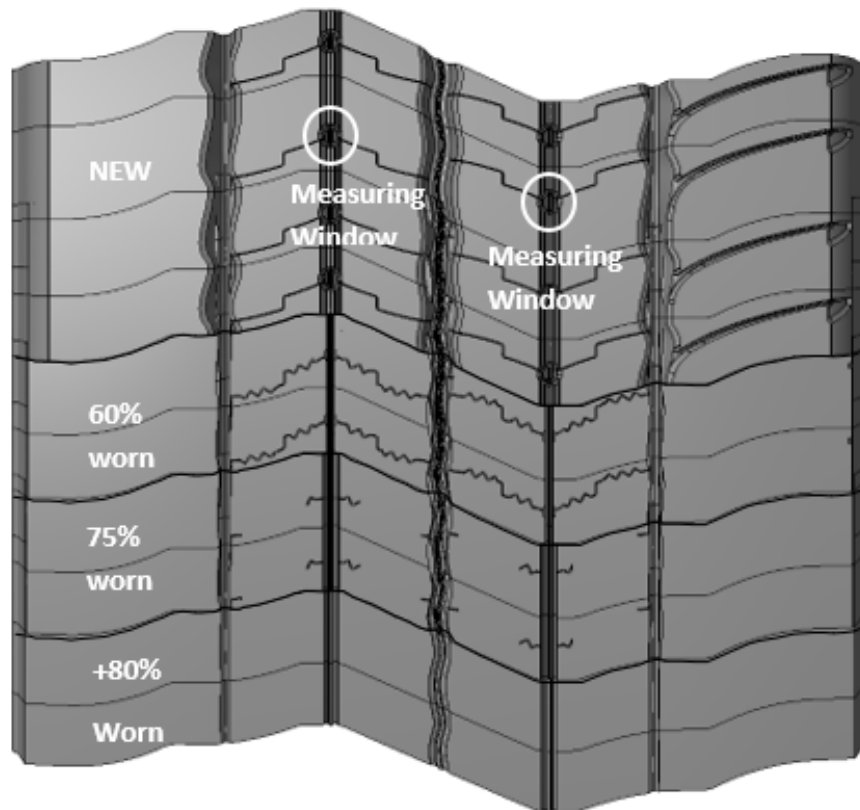
Note: Measurements shall not be made on stone ejectors or tread wear indicators.

An evolving tread design is a tread pattern that experiences a significant and noticeable transition in appearance as the tire wears down from the new state to the worn state. As the tread wears, some features disappear, while new features are revealed. This evolution in the tread pattern allows for the balancing and optimization of multiple performance characteristics over the full life of the tire as well as the maximum use of all available tread rubber.

New Evolving Generic Tread Design Example



2019-03 – Air Evolving Commercial Vehicle Tire Design Tread Depth Measurement Inspection



2019-03 – Air Evolving Commercial Vehicle Tire Design

Tread Depth Measurement Inspection

In the example on the previous page, the tread pattern in the new state is very compact with seemingly less void than what might be found in a more traditional tire. In fact, the void is still present beneath the tread surface where the grooves open and grow wider. As the tread wears and tread depth decreases, the hidden grooves are fully revealed providing improved wet traction towards the end of life. While such designs may appear unusual, they are fully compliant with all North American regulations.



The tire, when new, features wider, open shoulder grooves and narrower central grooves. All the grooves in the tire are considered major tread grooves.



The same tire, when two-thirds worn, shows the exposed three central grooves after they have evolved. They are still major tread grooves.

Inspection Guidance

How to Measure Tread Depth on Tires with Hidden Grooves

STEP 1: Confirm that your gauge is functional, and the probe is narrow enough to fit in the main tread grooves.

STEP 2: Push the tread depth gauge against a hard, flat surface and verify that it “zeros out” when fully compressed.

STEP 3: Depress the plunger or probe fully.

STEP 4: Place the probe into the center of a circumferential tire groove and push down on the gauge’s base.

Note: Some new regenerating groove designs may have a “measuring window” for checking depth and viewing tread wear indicators (TWI).

STEP 5: Do not measure at tread wear indicators or other raised surfaces that are part of the tread design.

STEP 6: Carefully remove the gauge by holding its barrel or outer case without touching the probe.



2019-03 – Air Evolving Commercial Vehicle Tire Design Tread Depth Measurement Inspection

STEP 7: Verify the tread depth reading ensuring the use of the appropriate scale as most gauges can read mm or 32nds of an inch.

STEP 8: Repeat STEPS 3-7 across the tread face at the other main circumferential grooves.



Measuring tread depth in the narrow central grooves on this new tire shows a tread depth of 12.31 mm or 15/32 inch.



Measuring tread depth in the fully open shoulder grooves on this new tire confirms the same depth of 12.31 mm or 15/32 inch.

In some cases, inspectors may falsely believe that hidden, rain drop features do not meet the minimum tread depth requirement. In fact, these grooves are of full depth and are open from the first mm or 32nd of an inch to the last. This can be verified with a simple tread depth gauge at all points in the tire's life. There are currently no tread groove minimum width (only depth) requirements in North America.