U.S. Department of Transportation
National Highway Traffic Safety Administration

OFFICE OF DEFECTS INVESTIGATION

ODI RESUME

Investigation: PE23009
Prompted By: VOQ Review
Date Opened: 05/26/2023 **Date Closed:** 12/13/2024
Investigator: Jonathan Harrison **Reviewer:** Joshua Neff
Approver: Tanya Topka
Subject: Device can break causing tire to deflate without notification to the operator

MANUFACTURER & PRODUCT INFORMATION

Manufacturer: RViBrake
Products: RViBrake Tire Patrol Device
Population: 95,499

Problem Description: Valve stem-mounted tire pressure sensors can break, causing tire deflation with no notice to the vehicle operator.

FAILURE REPORT SUMMARY

	ODI	Manufacturer	EWR D&I	Other	Total	EWR Field Reports
All Incidents:	1	408	0	0	409	0
Crashes/Fires:	0	0	0	0	0	0
Injury Incidents:	0	0	0	0	0	0
Number of Injuries:	0	0	0	0	0	0
Fatality Incidents:	0	0	0	0	0	0
Number of Fatalities:	0	0	0	0	0	0

Description of Other:

ACTION/SUMMARY INFORMATION

Action: This (PE) Preliminary Evaluation is closed with a manufacturer action.

Summary:

On June 8, 2023, Office of Defects Investigation (ODI) opened Preliminary Evaluation PE23009 to investigate reports of air pressure loss from tires equipped with Danko Manufacturing/RViBrake's

(RViBrake) Tire Patrol device, an aftermarket tire pressure monitoring system. ODI's initial inquiry determined that RViBrake was aware of 408 sensors being returned under warranty for leaking pressure, including approximately 40 that were reported to have broken in half, leaving the tires' valve stem core pressed open and leaking air.

ODI sent an Information Request (IR) letter to RViBrake on June 8, 2023. By analyzing the IR Response data, ODI learned that the bulk of the sensors returned under warranty were for dead sensors, or minor but consistent air leaks. The manufacturer believes that many of the warranty claims are user-induced, such as damage from curb strikes or from car washes. However, 41 warranty claims were for lost upper sensor halves, a condition that can cause the tire to deflate, without notification to the operator. This condition is particularly concerning when it occurs to one of the vehicle's steer axle tires. No crashes or injuries are known to be directly attributable to any of these sensors.

RViBrake explained that in the event of a sensor half detachment, the operator would not immediately be warned. The system refreshes the tire pressure information every three minutes, but it is not uncommon for a packet of information to not be received due to interference, especially with the rear wheels, which may be further away from the receiver. If the system does not receive fresh information from the sensor three times in a row, the icon for that sensor becomes greyed out on the display screen. Furthermore, if the system does not receive information from the sensor five times in a row, an audible alert sounds to warn the operator. As part of the IR response, RViBrake supplied a video replicating the worst case scenario. In the video, a broken and separated sensor half was installed on a fully pressurized steer tire on a Class-A motorhome. The tire deflated by approximately twenty seven percent in ten minutes. With the majority of the air still remaining in the tire after ten minutes, it is believed that the vehicle could still be safely maneuvered off of the roadway, illustrating that a broken Tire Patrol sensor does not lead to an immediate or rapid air loss of the tire.

After discussions with RViBrake to discuss ways to reduce the risk to operators, the company has pushed out a system software update that now triggers the audible alert after a loss of signal from the front tires in less than nine minutes. Due to the amount of time needed for a tire to deflate after a full sensor half detachment and in view of this software update action taken by RViBrake, which provides improved notification to the driver of a slow loss of pressure in the tire, ODI has closed this Preliminary Evaluation. The closing of this investigation does not constitute a finding by NHTSA that a safety-related defect does not exist. The Agency reserves the right to take additional action if warranted by future circumstances. To review the ODI report cited in the Closing Resume ODI Report Identification Number document, go to NHTSA.gov.