

# Predictive Detection System for Wheel Omission

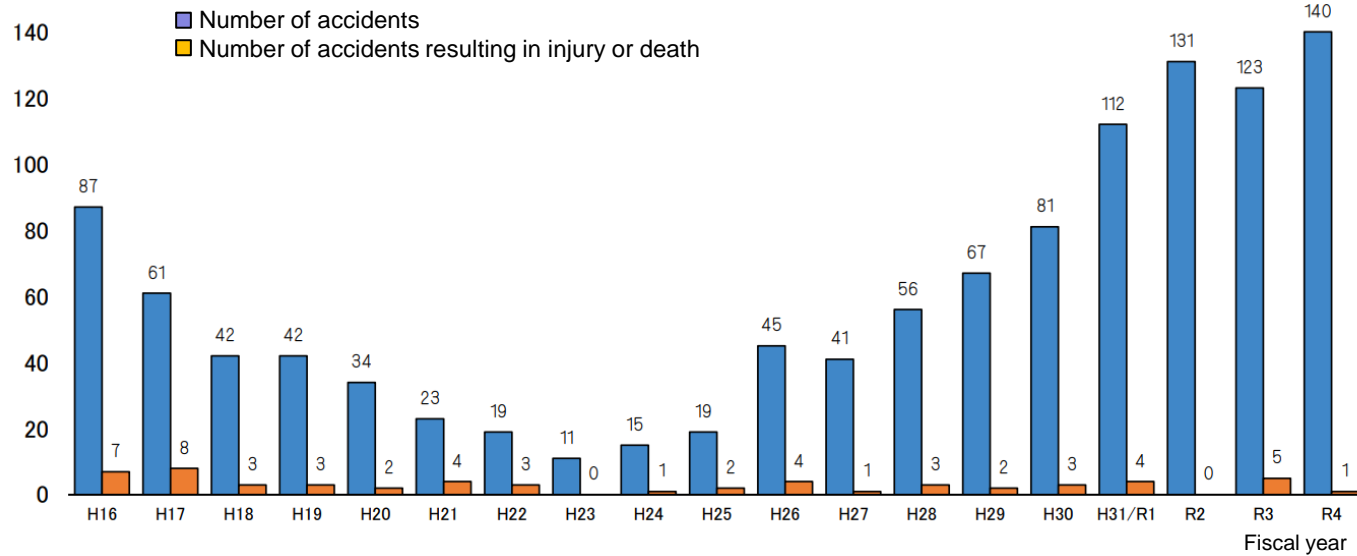
脱輪予兆検知システム



## Background

Accidents caused by loose truck wheels are becoming a social problem and on the rise in Japan and abroad.

Tokai Rika wants to help drivers feel secure and safe and prevent tragic accidents.



Excerpt from “Number of loose truck wheel accidents and trend analysis in 2022”  
(Ministry of Land, Infrastructure, Transport and Tourism, 2023)



Excerpt from “Awareness video for preventing loose wheel accidents”  
(Created by MLIT, 2020)

## Purpose

Notify a driver of a sign of a wheel falling off (= **loose nut**) to prevent the wheel from causing an accident

## Content and Overview

- The nut cap-shaped transmitter attached to a wheel nut detects a loose nut and notify the driver with light and sound.
- The detection unit can be also installed in cars currently used.

Receiver with indicator



Sound  
(Hearing)

Light (Sight)

The transmitter needs to be installed,  
but no wiring is required.



Detection of  
a loose nut



## Tokai Rika's strength

Tokai Rika's extensive experience and proven technology gained through the creation of smart systems and other radio wave systems support this reliable detection system.

## Technology

### Acceleration acting on a sensor is used to detect a loose nut

Patent applied

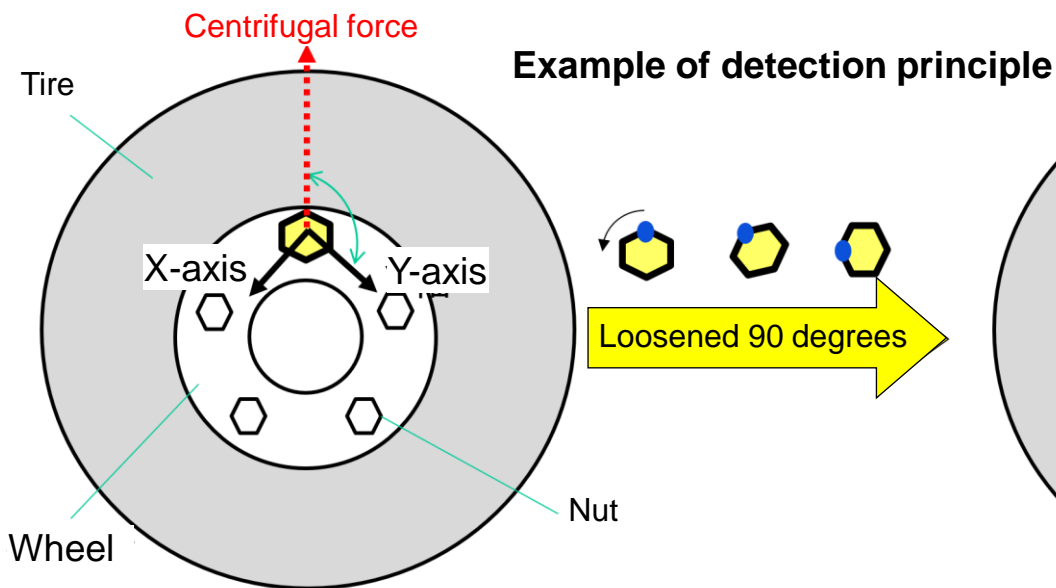


Fig. 1 Initial state

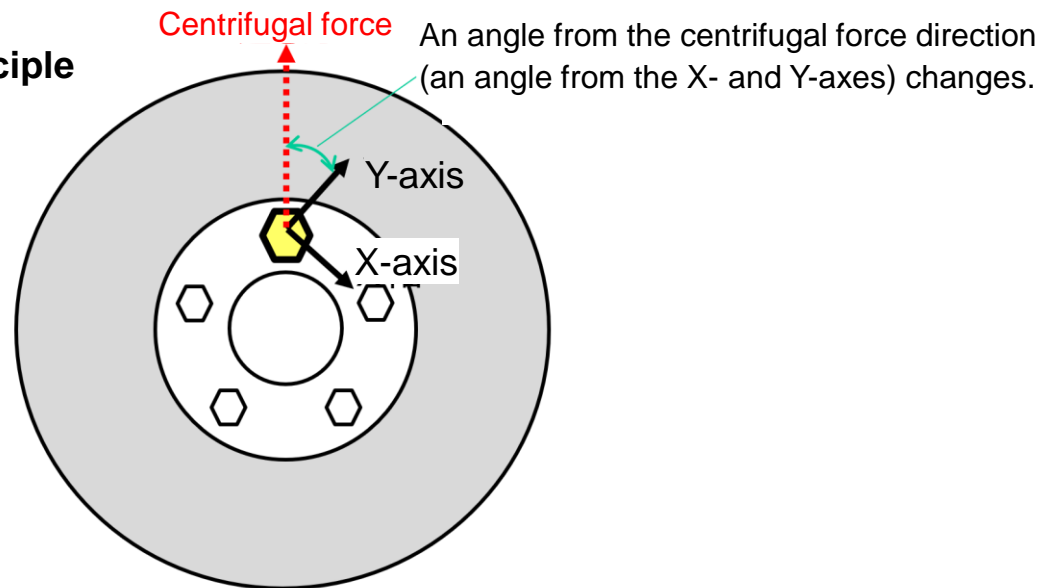


Fig. 2 Loosened state



## Specification

### ■ Transmitter

Power source	Built-in battery, one-year battery life
Operating temperature range	-40 to +120°C
Transmitted radio wave	314.98 MHz (specified low power radio station)
Waterproofness	Provided

### ■ Receiver

Power source	USB power delivery (Type-C)
Operating temperature range	-40 to +85°C
Power consumption	100 mA or less
Indication method	Built-in LED and built-in buzzer
Antenna	Installation required (dedicated connector)

