

## Vehicle Standards Guide 21 (VSG-21)

### National roller brake testing

This guide provides information for Authorised Officers and Vehicle Examiners who operate a roller brake tester, about the [National Roller Brake Testing procedure](#) (National RBT procedure).

This VSG has been updated to provide guidance on the end of the COVID-19 calibration schedules and the move to Stage 2 testing.

### Background

A heavy vehicle's ability to brake effectively and efficiently is critical to the safe operation of the vehicle on roads. Given the importance of a vehicle's brakes, regulators, operators, drivers, and the community have an interest in ensuring rigorous assurance processes are in place to verify brake performance.

The National Heavy Vehicle Regulator (NHVR) and industry use various brake testing methods that provide an indication of brake performance. Testing methods consider the location, time and safety limitations of the roadside or workshop and include decelerometer testing, skid plate testing or roller brake testing. Collectively, these testing methods are referred to as in-service brake tests.

Roller brake testing, like all in-service brake tests, is intended as a screening tool used to:

- verify that a vehicle's braking system is functioning
- provide information that highlights potential issues relating to non-compliances and/or system performance.

This information can then be used to determine if inspection of specific brake components is needed.

### National RBT procedure

The NHVR developed a National RBT procedure to ensure that all in-service brake tests of heavy vehicles are safe, consistent, and repeatable, enabling accurate assessment of a vehicle's brake performance.

### National RBT procedure stages

The NHVR recognised that to test brake performance using a roller brake tester in line with the new National RBT procedure, certain equipment and software updates were required. To address this requirement, the National RBT procedure was rolled out in two stages.

#### Note:

For those who do not have a roller brake tester, and instead conduct in-service brake tests by a stopping distance, decelerometer or skid plate test, there is no change to how these tests are conducted.

#### Stage 1

Stage 1 of the rollout is now complete.

It required roller brake testers to be updated to provide both dynamic and static test results. Once Stage 1 updates were completed, brake performance testing were to be conducted in line with the Alternative phasing in (AP) procedure.

#### Stage 2

Stage 2 requires more comprehensive software updates. These updates ensure that test results are reported correctly and will include a simplified pass/fail read-out that aligns with the [National Heavy Vehicle Inspection Manual \(NHVIM\)](#).

The NHVR has been advised that roller brake tester manufacturers have developed the necessary software updates and started to test and roll out this updated software to all roller brake testers.

To finalise the national RBT implementation, all roller brake testers must be updated in accordance with the Stage 2 requirements by **1 August 2024**.

## Calibration requirements: roller brake tester

The COVID-19 pandemic had a significant impact on operator’s ability to carry out calibrations of their roller brake tester in accordance with the National RBT procedure.

For this reason, the NHVR, in consultation with RBT manufacturers, extended the date by which the calibration was required by 12 months.

The NHVR has now been advised that all RBT manufacturers have reverted to their pre-COVID calibration schedules. As such, this extension has now been lifted and RBT calibration must be performed in accordance with the National RBT procedure.

### Background

Brake testers are used to inform routine maintenance and as an assurance tool that a vehicles braking system is functional and likely to be meeting regulatory standards.

The National RBT procedure requires that equipment used to conduct roller brake tests are calibrated, in accordance with the manufacturer’s standards, at least every 12 months, or in remote areas where usage is lower, every 24 months.

There is a concern that if they are not routinely calibrated, they could be less accurate. This document identifies some of the causes for roller brake tester to lose accuracy and identifies steps that operators may take to maintain confidence in their test results.

### Reliability of Results

The NHVR has been advised that delaying calibrations should not have a major impact on the reliability of test results. To assist operators, the NHVR has identified the following areas that may impact the reliability of results generated from RBT. These include:

- Loss of friction (between tyres and rollers)
- Drift in the accuracy (of load cells and strain gauges)
- Vehicle placement on the rollers – vehicle axles not aligned squarely with the brake rollers.

### Loss of friction

The friction surface on rollers on a roller brake tester wear over time and may result in a loss of friction (grip) between the roller and the vehicle’s tyres. This loss in friction is only likely to impact a test where there is a high brake force or the tyres or rollers are contaminated with water. For most brake tests, conducted up to the point of slip, there should be no impact from any loss of friction.

If friction loss does occur, operators can expect to see a drop in the highest brake force measured across multiple vehicles as vehicles will tend to slip before maximum deceleration can be measured.

Where friction loss is starting to occur, operators are advised that the following steps may be taken to ensure that testing measurements remain valid:

- Ensure that testing is only performed on dry days or when tyres and rollers can be kept dry
- Take extra care to ensure that tyres are free of dust, moisture and other contaminants
- Check vehicle alignment
- Contact your RBT service provider they may be able to provide advice that can improve the situation.

### Accuracy Drift

Roller brake testers use load cells and strain gauges to produce brake force measurements. Over time, there can be slight drift in these cells and gauges which reduces the accuracy of the brake force measurements.

Many modern roller brake testers in use have load cells and strain gauges which use ‘solid state’ technology which are not as prone to drift as previous technologies.

While drift in modern cells and gauges are minimal or unlikely, the following steps may be taken to ensure that results remain valid:

- Follow the manufacture start-up and self-test procedures.
- Look for biases in results between left and right hand sides, consistently higher or lower readings on one side may indicate a problem.
- Consistently high, low readings or error messages indicate complete failure of an RBT – these results should not be used.
- Contact your roller brake tester service provider if you have concerns or for advice on any specific risk areas for your make and model.

### Validation of results

Where calibration of the RBT is delayed, it may be useful to include a physical inspection to validate the readings obtained.

Performing a physical inspection will identify many causes of low performance such as, worn linings, incorrect adjustment, seized shoe bearings, defective brake chamber, contamination of lining surfaces etc.

#### For more information:

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Revised	Apr 2020	Major review for COVID-19
Revised	May 2024	Ends COVID-19 calibration and implements stage 2.