



Phasing in the National roller brake testing procedure

(Including an alternative phasing in procedure)

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1 Background

With the introduction of the *Heavy Vehicle National Law (HVNL)* all inspection requirements (including some changes to these requirements) are now contained in the *National Heavy Vehicle Inspection Manual (NHVIM)*. However, while the inspection requirements covering the methods used to test brake performance have changed, the NHVIM does not have a procedure for conducting these tests using a roller brake test (RBT) machine. Since introducing this change, it has been recognised that a uniform national roller brake testing procedure is needed. In conjunction with RBT machine suppliers, industry bodies and transport and road authorities, the National Heavy Vehicle Regulator (NHVR) has developed the *National roller brake testing procedure* (National RBT procedure). This procedure will take effect from 1 February 2018, replacing the current transitional arrangements for RBT for compliance purposes.

To enable full implementation of the National RBT procedure, changes to equipment programming are required. Given the specific requirements, it is anticipated that it may take approximately 12 months to perform the necessary programming and roll out the changes to all RBT machines for compliance purposes.

An *Alternative phase in procedure* (AP procedure) has been developed to be used in conjunction with the National RBT procedure to fill the procedural areas that will be delivered by the RBT logic once programmed.

2 Update to transition period

To introduce the NHVIM, Roads and Maritime Services implemented a transitional arrangement for how non-compliances relating to brake performance were managed. From 1 February 2018, these transitional arrangements will end and RBTs done during compliance inspections will be conducted in accordance with the AP procedure and National RBT procedure.

Use of the AP procedure requires axle performance to be reported in both dynamic and static deceleration (in %g) and vehicle performance in dynamic deceleration (in %g). In order to allow for RBT machines to be updated, this process will be rolled out in two stages.

Stage one of the rollout will require RBT machines to be updated to provide test results of both static and dynamic vehicle performance. Once stage one RBT machine updates have been completed, brake performance test must be done in accordance with the AP procedure. It is expected that current jurisdictional protocols will remain in place until this update has been completed and that all Government operated inspection stations will be using the AP procedure by 1 May 2018.

It is anticipated that third party inspection stations, such as approved inspection stations (AIS), will receive the updates as part of the scheduled service and calibration inspections of their RBT machines.

Stage two of the new National RBT procedure will require a more comprehensive software update to be made to RBT machines. The NHVR is currently working with RBT machine manufacturers to develop the necessary software updates and has not set a date for the completion of stage two of the rollout. More information will be provided once the software changes are finalised and an implementation schedule is set.

3 Alternative phase in procedure (for service brakes)

The RBT procedure (including machine integrated decision trees) was developed following industry and jurisdiction engagement and the NHVR's review of the RBT performance standards. Where RBT machines have not been programmed to meet the requirements of the RBT procedure, the following AP procedure is to be used to perform the function of the machine integrated decision tree in the RBT procedure.

Where the brakes of a heavy vehicle are tested on an RBT machine the minimum brake performance required for an overall vehicle must not be less than:

45%g (4.4kN/t, 4.4m/s²) when using dynamic weight

Reactive suspension (like trailing arm suspension), vehicle smart systems and poorly performed tests, can cause incorrect indication of brake functionality. The use of the dynamic weight test method negates the risk that vehicles with good brakes will be incorrectly defected. However, as axle restraint and other controlled

methods are not widely available on RBT units in Australia, there is a significant risk that poorly performed tests will allow vehicles with brakes that have poor performance to pass the test.

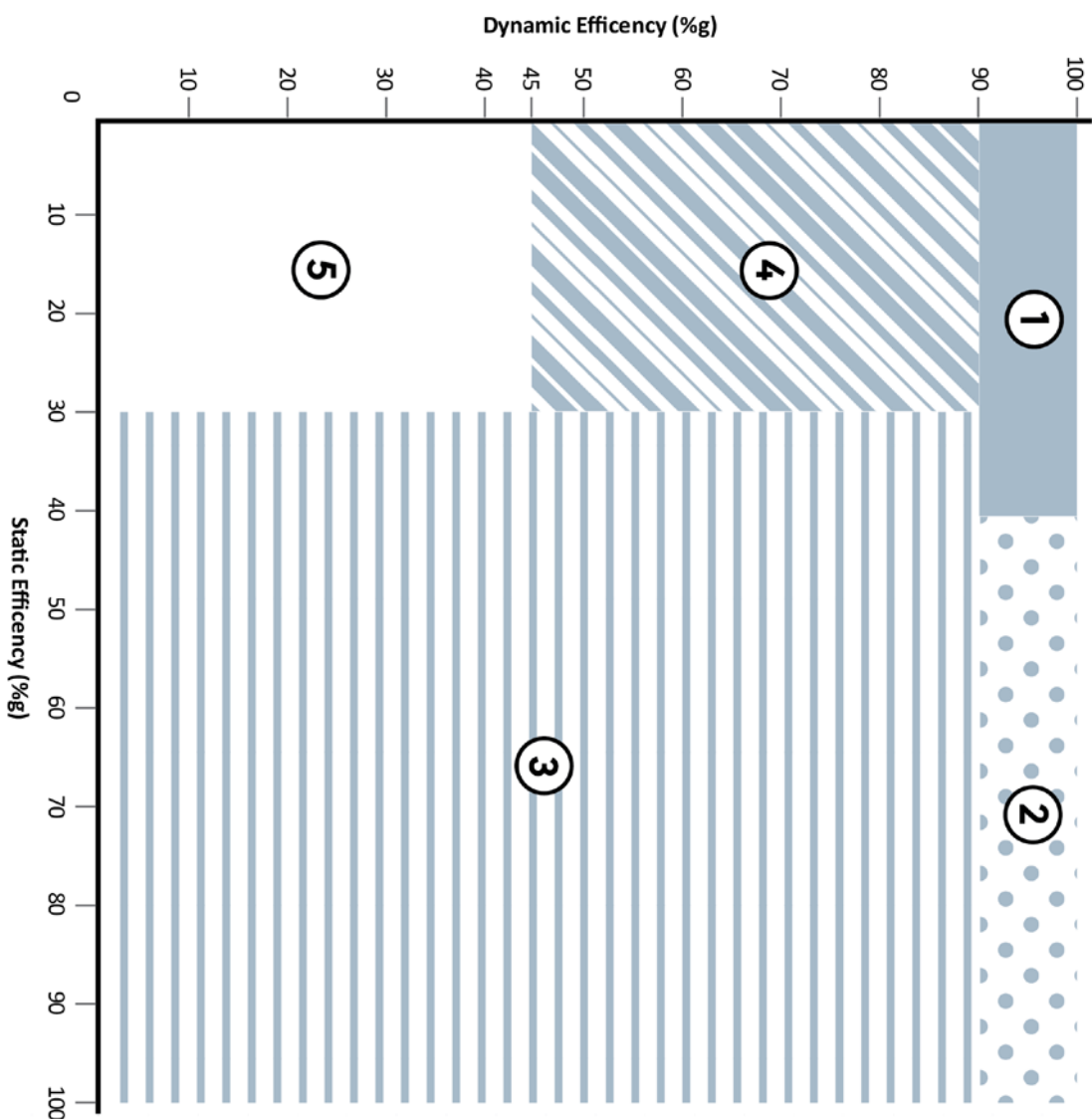
To reduce the likelihood of this risk, the validation of test results in Table 1 should occur as each axle is tested. Compare the static and dynamic test results for each axle against the results in table 1 and take the required action.

3.1 Individual axle test validation

Table 1: Individual axle test validation

Invalid and suspect tests		
Results	Rationale	Action
Greater than 90%g dynamic and less than 40% static	An extremely high dynamic result has been recorded along with a low static result. These are numerically inconsistent.	Ensure that the setup is correct and have the driver apply the brakes more slowly. If this result is repeated on a lightly laden axle with a reactive suspension the RBT operator may wish to accept the result, as this may be a limitation of test for this axle for the vehicle configuration. Accepting the test would then be considered a pass for the axle unless the inspector found physical evidence of a defect.
Greater than 90%g dynamic and greater or equal to 40%g static	An extremely high dynamic result has been recorded and this indicates that the test may have been poorly performed. However, the static result is indicative of brakes that are performing their intended function. This is 33% higher than the minimum static acceptance level for an individual axle. The acceptance levels are a compromise within the test limitation.	The RBT operator can accept this result as a pass.
Test results that indicate good brake performance on an axle		
Results	Rationale	Action
Greater than or equal to 30%g static and less than or equal to 90%g dynamic	This has met the minimum static performance under the test limitations and is a valid test (less than or equal to 90%g dynamic).	Accept the test and pass the axle.
Dynamic at or between 90%g and 45%g and static less than 30%g	The dynamic result is consistent with brakes on a well-functioning axle. However, the low static result indicates that the axle has only been lightly tested for the presented condition.	Accept the test and pass the axle. However, if this result is inconsistent with the vehicle under test, the RBT operator may want to retest the axle.
Test results that indicate the brakes on an axle have functionally failed		
Results	Rationale	Action
Less than 45%g dynamic and less than 30%g static	There are no test conditions that would deliver this test result other than the poor brake performance at the axle. This poor performance may be the result of low air pressure.	Check the air pressure and if ok accept the test and fail axle. Else, build up the air pressure and retest.

Quick Reference Guide - Outcomes of RBT of Axles



① Inconsistent results

Check setup and retest ensuring the driver applies the brakes more slowly. Lightly laden axle with a reactive suspension or poorly performed tests are most likely to be the cause of this result. If result is repeated when retested, an inspection of wheel ends should be undertaken. If no defect is found, the result is to be taken as a pass.

② Possible testing issue

High dynamic efficiency indicates possible testing error, but level of static performance confirms the functioning of the brakes. Result is to be taken as a pass.

③ Normal pass result

Test results meet minimum required levels and do not show any signs of testing errors. Result is to be taken as a pass.

④ Limited test assurance

Test results meet minimum required levels but low static efficiency indicates the test may not be a true indicator of brake performance. Consider retesting, however the result is to be taken as a pass if accepted and no physical defect is identified

⑤ Functional failure

- Check air pressure. If low, build up and retest axle.
- If air pressure is ok or result or repeated, the result is to be taken as a fail.

Conversion Table

%g	kN/t	m/s ²
90	8.8	8.8
45	4.4	4.4
30	3.0	3.0