Correct as at 17th May 2026. It may be superseded at any time.

Extract taken from: Heavy vehicle specialist certification > Vehicle dynamic performance > Static roll threshold (SRT)

7-3 Static roll threshold (SRT)

Certifier categories: **HVS1** | **HVS2** | **HVS3**

Reasons for rejection

1. A class TD vehicle that must comply with SRT and be certified has an assessment below 0.35g (Note 1).

2. The method of calculating the SRT was not:

    a) a physical test of the vehicle on a tilt table according to the procedure in SAE J2180 – Dec 1998 or by a procedure approved by International Accreditation New Zealand (IANZ), or

    b) a method approved by the Transport Agency and published on the Transport Agency's website.

3. The load height has been incorrectly determined.

4. The load mass has been incorrectly determined.

5. Incorrect information has been input into the SRT calculator.

6. The load configuration used to calculate the centre of gravity of the load was not based on:

    a) mixed freight, or

    b) uniform density,

    c) other loads.

7. For mixed freight 70% of the load mass was not used for the bottom half and 30% of the load mass for the top half of the load space.

8. For uniform density freight the centre of gravity has not been placed midway between the load bed and the load height.

9. The combination of load height and mass is inappropriate for the particular type of deck or body fitted to the vehicle.

10. A motor vehicle with retractable axles has not had the SRT calculated with the retractable axle in the non-retracted position.

11. The deck or body fitted to the vehicle has been changed and the SRT has not been recertified.

12. A semi trailer carrying import/export containers on an overweight permit has not had its SRT calculated in accordance with **Technical bulletin 8** and its amendments.

Note 1

The following vehicles of class NC and class TD do not have to comply with the minimum SRT requirements:

    a) a vehicle of class NC that does not have a deck or body on which to carry a load and is fitted with a turntable coupling to tow a semi-trailer

b) a vehicle operating under *section 6*, or with a vehicle axle index above 1.1 and operating under an overweight permit, or both, provided that the operator of the vehicle complies with the conditions of the permit and the applicable requirements in section 6

c) a vehicle that is being used on a road or portion of a road that is designated as a road construction zone under *regulation 12* of the *Heavy Motor Vehicle Regulations 1974*

d) a vehicle that is being used on a road or portion of a road that is a roadworks zone approved by the road controlling authority

e) a vehicle that is not normally used on a road and that a road controlling authority has authorised to cross a road

f) a vehicle that is designed exclusively for transporting earth or other bulk material and that may only be used unladen on a road

g) a vehicle with a tipping body, but only when the tipping body is raised for the purpose of discharging a load at low speed

h) a vehicle recovery service vehicle that is principally designed to tow or transport a heavy motor vehicle;

i) a vehicle first registered before 1 January 1940

k)For the avoidance of doubt, a high-productivity motor vehicle must comply with the minimum SRT requirements, except if the vehicle is a vehicle described in *(g).*

Note 2

X1/Y1 represents the maximum allowable load height (X1) of the vehicle that is used to calculate the maximum safe gross mass (Y1) of the vehicle to meet an SRT of 0.35g.

Y2/X2 represents the maximum allowable gross mass (Y2) of the vehicle when loaded that is used to calculate the maximum safe load height (X2) of the vehicle to meet an SRT of 0.35g.

The procedure is fully explained in Summary of legislation 6 to 10.

Note 3

Level 1 assessment (HVS1):

Level 1 assessment is the most basic and requires minimal data, the computer programme relies on a number of generic default values for assessing the vehicle's performance. It also makes assumptions about the centre of gravity of the load, by offering two typical load scenarios, mixed freight or uniform density load. The use of Level 1 is not permitted when calculating SRT for overweight permits

Level 1 assessment caters for the following type situations:

a) full trailers (including pole trailers) with stanchions or relatively flat decks, or

b) semi-trailers: (flat decks, step-decks such as in low loaders or B-trains), or

c) simple trailers with relatively flat decks when:

i. carrying a load of uniform density (the centre of gravity is halfway up the load), or

ii. carrying a load of mixed freight (the centre of gravity is equivalent to 40% of the load height taken from the base of the load).

Note 4

Level 2 assessment (HVS2):

Level 2 assessment requires more detailed data about the vehicle's mechanical characteristics such as the actual stiffness values of the suspension and load characteristics.

This level also caters for scenarios where the load's centre of gravity cannot easily be assumed. Typical examples include irregular or complex shaped hoppers, body shapes of irregular cross section, non-uniform loads such as construction machinery and equipment.***** With these cases a Level 2 SRT Certifying Engineer must assess the vehicle.

A Level 2 assessment must be the basis for SRT certification when an operator is applying for an overweight permit to carry import/export containers as explained in **Technical bulletin 8** and its amendments.

> ***** Alternatively, the SRT mass and height limits for construction machinery and equipment carried on one of the level 1 trailers (as above) may be considered by level 1 assessment and taken to be the same as for a uniform density load, however this alternative is conservative with regard to mass and height limits.

Note 5

Level 3 assessment (HVS3):

Level 3 assessment is a practical assessment of the static roll performance and requires the test to be carried out to the requirements of SAE J2180 – Dec 1998 of the American Society of Automotive Engineers using a full size tilt table.

This level of certification is valid for all SRT requirements.

Note 6

The Transport Agency-approved SRT Certifier or SRT Vehicle Inspector will assess the vehicle's rollover performance at the maximum legal mass limits and maximum allowable load heights. The mass limits will be assessed at maximum potential axle set limits or a lower limit controlled by trailer/truck mass ratio if applicable.

If the operator carries overweight loads under the overweight permits, they may elect to increase the mass limit to a vehicle axle index (VAI) of 1.1. Unless the vehicle has a body that restricts the load height, the assessment will be undertaken at 4.3m. If the trailer at maximum potential load mass and height meets or exceeds the 0.35g SRT requirement, then an SRT certificate can be issued. The Certificate of Loading will be endorsed with these values. Alternative certification scenarios are covered in **Technical bulletin 8** and its amendments.

Note 7

If the trailer at maximum potential load mass and height meets or exceeds the 0.35g SRT requirement, then an SRT certificate can be issued. The Certificate of Loading will be endorsed with the maximum load and height values.

Note 8

SRT requirements for HPMV vehicles and vehicles operating on 'O' permits and carrying import and export containers are covered in **Technical bulletin 7**, **Technical bulletin 8**, **Technical bulletin 10**

Summary of legislation

Applicable references

- SAE J2180 – Dec 1998 of the American Society of Automotive Engineers.

Applicable legislation

- **Land Transport Rule: Vehicle Dimensions and Mass 2016**

Vehicle Dimension and Mass (section 3)

Section 3

Static Roll Threshold (SRT) performance requirements

Scope of this section

This section sets out Static Roll Threshold (SRT) performance requirements for heavy motor vehicles. These requirements are intended to ensure the stability of heavy motor vehicles when negotiating corners within posted advisory speeds, and when undertaking evasive manoeuvres to avoid a collision .

Minimum SRT values

1. Unless exempt (Note 1) a vehicle of class NC or class TD, whether laden or unladen, must comply with an SRT of at least 0.35g.

3.3 Compliance with SRT

2. A vehicle of class TD, other than an exempt vehicle (Note 1), that is first registered on or after 1 July 2002 and is required to comply with the SRT specified in *1*, must be certified for SRT in accordance with 7 to 9 if it has a body height or load height above the ground that exceeds 2.8m.

3. A vehicle of class NC, other than an exempt vehicle, must:

a) comply with the SRT specified in *1*, and

b) if checked for compliance with SRT, have the SRT determined by one of the methods specified in *7*.

Methods for determining SRT

4. SRT must be determined by one of the following methods:

a) a physical test of the vehicle on a tilt table according to the procedure in the *SAEJ2180-DEC 1998 of The American Societyof Automotive Engineers* and carried out using a procedure approved by International Accreditation New Zealand, or

b) a calculation using the “SRT Calculator” computer program approved by the Transport Agency, or

c) a method approved by the Transport Agency and published on the Transport Agency’s website .

Determining the appropriate loading of a vehicle

5. The following procedures must be applied to determine the appropriate vehicle loading:

a) for mixed freight loads and uniform density loads:

i. if the vehicle is loaded to the maximum internal body height or to the maximum height specified in *schedule 4* of the **Vehicle Dimension and Mass Rule**, the maximum allowable gross mass must be determined

ii. if the vehicle is loaded to the maximum allowable gross mass specified in *schedule 4* of the **Vehicle Dimension and Mass Rule**, the maximum allowable load height must be determined

b) for all other loads, for a particular height above ground level of the centre of gravity of the load, the maximum allowable gross mass of the vehicle and its load must be determined.

6. The combination of load height and load mass in *6* applies for a particular standard type of loading that must be appropriate for the particular type of deck or body with which a heavy motor vehicle is fitted, and must be one of the following types of load:

a) mixed freight, where 70% of the load mass is in the bottom half of the load space and 30% of the load mass is in the top half of the load space

b) uniform density, where the load is uniformly distributed between the load bed and the top of the load so that the centre of gravity of the load lies midway between the load bed and the load height

c) “other loads”, where the height above ground of the centre of gravity of the load is entered in the calculation.

7. If the deck or body fitted on a heavy motor vehicle is changed to allow a different type of load to be carried, the SRT must be determined, and the vehicle recertified, for the new loading.

8. A motor vehicle with a retractable axle or axles must be assessed under the procedures in *3.16(4)* of the **Vehicle Dimension and Mass Rule** with its axles in a non retracted position.

9. For a load of logs, the maximum allowable load height shall be determined by the following method:

a) measuring the height above ground of the highest point of the load, and

b) if the height in *(a)* does not comply with the SRT, then measuring the height above ground of the highest point at each end of the highest packet and calculating an average of the two measurements, and

c) if the height in *(a)* or *(b)* does not comply with the SRT, and the load comprises multiple packets and the highest points of all of the packets differ in height by no more than 1m, measuring the average height of each packet by the method described in *(b)* and calculating an average height of all packets.

Certifying results of SRT test

10. SRT test results must be:

a) verified for compliance with loading and mass specifications by a vehicle inspector or an inspecting organisation, and

b) specified in a document of compliance that complies with a form approved by the Transport Agency.

11. SRT test results must be displayed on a vehicle's certificate of loading with the options for load height and gross mass specified on the certificate as follows:

‘SRT 0.35g X1/Y1, Y2/X2

where:

X1 = maximum allowable load height above ground in metres to two decimal places

Y1 = maximum safe gross mass to nearest tonne to meet SRT of 0.35 g

Y2 = maximum allowable gross mass to nearest tonne

X2 = maximum safe load height above ground in metres to two decimal places to meet SRT of 0.35g' (Note 2)

Page amended **1 February 2017** (see **amendment details**).