7-2 PSV static rollover

Certifier categories: **HVEC** | **HMCD**

Reasons for rejection

1. A motor vehicle that entered service as a passenger service vehicle in NZ on or after 1 July 2000 with a floor not more than 2m above the ground cannot achieve a sideways tilt of 35 degrees when tested.

2. A motor vehicle that entered service as a passenger service vehicle in NZ on or after 1 July 2000 with a floor not more than 2m above the ground cannot achieve a sideways tilt of 28 degrees when tested (Note 3). During testing the passenger service vehicle:

a) was not loaded with weights representing the occupants mass in accordance with the deemed mass in all seating positions on the upper deck of a double-decked vehicle and in all seating positions on a single decked vehicle, or

b) roof rack, if fitted, was not loaded with the maximum permitted load, or

c) suspension system was not in the uppermost position on a vehicle with a variable suspension system, or

d) tilt platform stop to prevent the lower wheels of the passenger service vehicle from slipping sideways exceeds the height from the tilt platform to the bottom edge of the wheel rim, or

e) lightweight strop fitted between the higher side of the passenger service vehicle and the platform to prevent the vehicle from rolling over has an influence on the test, or

f) stability test and the checking of the accuracy of the test equipment was not carried out under the guidance of a HVEC certifier.

4. The proof of the vehicle meeting the stability angle is not:

a) written documentation from the vehicle manufacturer, or

b) type approval, or

c) calculations, if the CoG can be established within 50mm of the longtitudinal centreline, or

d) practical testing.

5. The documentation for certification is incomplete.

Note 1

The deemed mass of each occupant is:

a) 80kg for adult occupants, and

b) 65kg for secondary school pupils, and

c) 55kg for intermediate school pupils, and

d) 42kg for primary school pupils.

Note 2

The CoG in the chassis rating is valid for the unladen vehicle in the configuration as approved in Japan.

This itself is not sufficient to establish the that the vehicle, which may be modified in NZ prior to registration, would comply with the stability requirements in the PSV Rule.

However, this data can be used, as one of the input data, when the position of the CoG of the modified and laden vehicle is determined, which can the be directly used to establish compliance.

Other input data to such a calculation could and should also include the number and position of passengers, mass and position of any toilet and kitchen facilities and equipment including water sontainment, mass & position of any air conditioning equipment, roof rack capacity and the position of the load on it, and other item that may be relevant.

Note 3

Fitting a roof rack to a PSV is a modification requiring certification by a HVEC and may require recalculation or testing of the vehicle's stability.

Summary of legislation

Applicable references

- UN/ECE Regulation No. 66
- Australian Design Rule 59/00.

Applicable legislation

- **Land Transport Rule: Passenger Service Vehicles 1999**

Passenger Service Vehicles 1999 (section 7)

Stability requirements

1. A motor vehicle which entered service as a passenger service vehicle in New Zealand on or after 1 July 2000 must be stable under the following conditions of static tilt:

a) a vehicle with a floor not more than 2m above the ground, and loaded with the deemed passenger weight (Note 1) in all positions on the upper deck of a double-decked vehicle and in all seating positions on a single-decked vehicle and the maximum weight for the roof rack, must be stable on a surface which is subjected to a sideways tilt of 35 degrees, as demonstrated by one of the following methods:

i. written documentation from the vehicle manufacturer, or

ii. type approval, or

iii. calculations, if the centre of gravity can be established within 50mm of the longitudinal centreline, or

iv. practical testing carried out in accordance with requirement with the following conditions:

b) the passenger service vehicle must be loaded with weights, representing the occupants' mass in accordance with the deemed mass (Note 1) in all seating positions on the upper deck of a double-decked vehicle and in all seating positions on a single-decked vehicle,

c) the roof-rack, if fitted, must also be loaded with the maximum permitted load,

d) a passenger service vehicle with a variable suspension system must be tested with the suspension system in the uppermost position,

e) the tilt platform may be fitted with a stop to prevent the lower wheels of the passenger service vehicle from slipping sideways, however, this stop must not exceed the height of the tyres, from the tilt platform to the bottom edge of the wheel rim,

f) a lightweight strop of sufficient strength may be fitted between the higher side of the passenger service vehicle and the platform to prevent the vehicle from rolling over, and the strop must be fitted in a suitable way while keeping its influence on the test to a minimum,

g) if the centre of gravity of the passenger service vehicle, loaded according to requirement 2, as determined by a certifier, is not within 50mm of the longitudinal centreline, the vehicle must be tested by being tilted to the side of the centre of gravity,

h) the stability test and the checking of the accuracy of the test equipment must be carried out under the guidance of a person authorised by the NZTA, and that person must certify that this specification has been complied with,

i) a vehicle with a floor 2m or more above the ground, and loaded with the deemed passenger weight in all positions on the upper deck of a double-decked vehicle and in all seating positions on a single-decked vehicle and the maximum weight for the roof rack, must be stable on a surface which is subjected to a sideways tilt of 28 degrees, as demonstrated by one of the following methods:

    i. written documentation from the vehicle manufacturer, or

    ii. type approval, or

    iii. calculations, if the centre of gravity can be proven within 50mm, or

    iv. practical testing carried out in accordance with the following conditions:

j) the passenger service vehicle must be loaded with weights, representing the occupants' mass in accordance with the deemed mass (Note 1) in all seating positions on the upper deck of a double-decked vehicle and in all seating positions on a single-decked vehicle,

k) the roof-rack, if fitted, must also be loaded with the maximum permitted load,

l) a passenger service vehicle with a variable suspension system must be tested with the suspension system in the uppermost position,

m) the tilt platform may be fitted with a stop to prevent the lower wheels of the passenger service vehicle from slipping sideways, however, this stop must not exceed the height of the tyres, from the tilt platform to the bottom edge of the wheel rim,

n) a lightweight strop of sufficient strength may be fitted between the higher side of the passenger service vehicle and the platform to prevent the vehicle from rolling over, and the strop must be fitted in a suitable way while keeping its influence on the test to a minimum,

o) if the centre of gravity of the passenger service vehicle, loaded according to this requirement, as determined by a certifier, is not within 50mm of the longitudinal centreline, the vehicle must be tested by being tilted to the side of the centre of gravity,

p) the stability test and the checking of the accuracy of the test equipment must be carried out under the guidance of a person authorised by the NZTA, and that person must certify that this specification has been complied with.