3 Vehicle structure

3-1 Structure

Reasons for rejection

Mandatory equipment

1. A sliding chassis is not fitted with both:

    a) an effective locking device to prevent inadvertent extension or separation, and

    b) endstops at the end of the slideway to prevent separation of the sliding parts if the primary locking device fails.

Condition and performance

2. Refer to **general trailer pages**.

3. The chassis (Note 1), body or other load-bearing structure of a vehicle, including a monocoque construction body, has any of the following damage so that the vehicle is no longer of adequate strength for all conditions of loading and operation for which the vehicle was constructed:

    a) deformation from original shape that has affected the vehicle's structural integrity, or

    b) cracking, or

    c) significant corrosion or delamination, or

    d) significant rust heave that exceeds the limits in Figure 3-1-3, or

    e) poor repairs that have not returned the structure to within safe tolerance of when it was manufactured eg:

        i. filler has been used to conceal corrosion damage or deformation of a component, or

        ii. a high-strength steel component has been heated, or

        iii. a component has been strengthened.

    f) loose, broken or missing fasteners or rivets, or

    g) damage that affects the integrity, operation or mounting of the following components:

        i. steering and suspension system, or

        ii. load anchorages, or

        iii. brake system, or

        iv. mandatory lighting equipment, or

        v. towing connections, or

vi. vehicle body.

4. A body-to-chassis attachment, such as a weld, fastener, hinge, body guide or locking device, is:

a) missing , or

b) loose, or

c) broken, or

d) cracked, or

e) otherwise in poor condition.

5. A tipping body hinge, body guide or locking device has deteriorated so that it is not effective in securing the body to the chassis.

6. The locking of a sliding chassis locking device is not readily verifiable by visual inspection.

7. A sliding chassis locking device has wear or damage, such as a worn or bent pin, so that it is not effective.

8. A sliding chassis locking device does not operate correctly.

9. A sliding chassis end stop is:

a) missing, or

b) insecure, or

c) damaged.

10. A vehicle which uses a wooden or wood laminate floor as a structural component of the chassis has:

a) deformation from original shape that has affected the vehicle's structural integrity (Note 5) (Figure 3-1-4), or

b) significant cracking of the body structure or mounting points, or

c) significant corrosion of steel elements, delamination, or wood rotting or

d) significant rust heave in steel elements that exceeds the limits in (Figure 3-1-3), or

e) poor repairs that have not returned the structure to within safe tolerance of when it was manufactured, for example:

i. filler has been used to conceal any damage or deformation of a component

ii. a high-strength steel component has been heated

iii. a component has been strengthened.

Modification and repair

11. A modification or repair affects the vehicle structure and:

a) is not excluded from the requirements for HVS certification (Table 3-1-1), or

b) the modification is not for the purpose of law enforcement or the provision of emergency services, or

c) is missing proof of HVS certification, that is the vehicle has been modified or repaired, and:

i. no LANDATA record has been entered, or

ii. no valid LT400 form from an HVS certifier of category HVEC or HMCD has been presented.

Note 1

Body means that part of the vehicle that is designed for the use and accommodation of the occupants or to hold any goods.

Chassis means the structural lower part of a vehicle to which the running gear and, as applicable, engine, transmission, steering system and body may be attached.

Chassis assembly means a chassis with running gear attached and, as applicable, engine, transmission and steering system attached.

Note 2

Rust stains can indicate fretting or movement between two components, for example as a result of loose fasteners or cracking.

Note 3

Chassis cracking is most likely to occur in the following areas:

- where there are abrupt changes in chassis section
- adjacent to welds
- body mounting points
- adjacent to loose fasteners
- notches.

Note 4

Corrosion is most likely to occur in areas where moisture is retained, or when the vehicle is used to carry stock, fertiliser or corrosive cargo.

Note 5

Dents smaller than 5mm deep and 40mm in diameter (to the outer edges of the crease), such as those caused by hail, in the pillars, cant rail or any other similar roof structure, should not be considered to affect the vehicles structural integrity. Any damage larger than above should be referred to a repairer for additional information (see Figure 3-1-4).

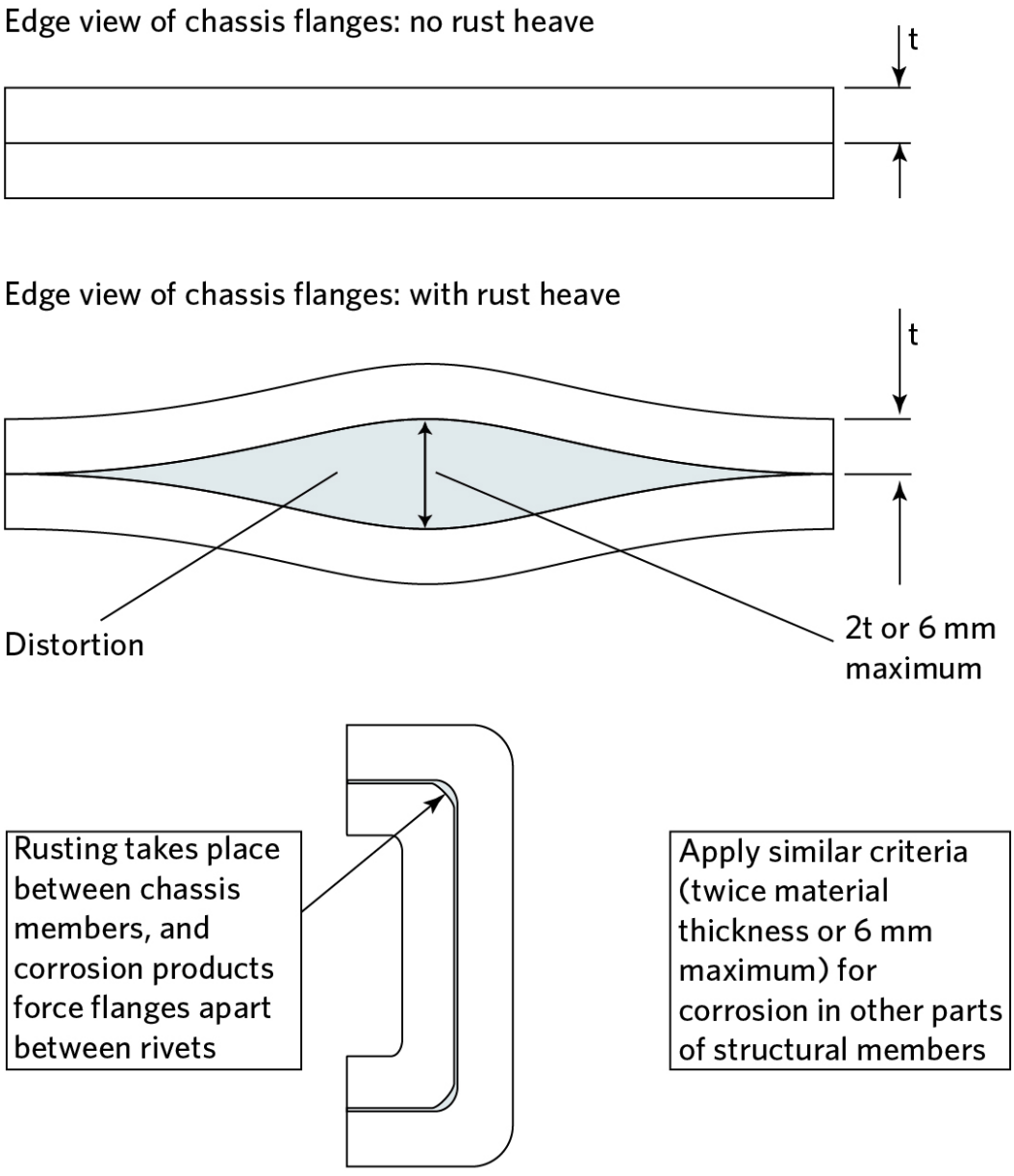
Table 3-1-1. Requirements for HVS certification

HVS certification is required	HVS certification is not required
1. Repairs to a structural component of a monocoque body. 2. From 1 January 2025 (Note 6) repairs or modifications to a chassis, including a chassis cross member which is: a) the first or last cross member of the chassis, or b) a cross member that is fitted within 500mm of an engine mount, transmission mount or suspension support, or c) a cross member to which a driveshaft centre bearing is fitted, or d) a cross member that supports any of the following: i. ball-race turntable, or ii. fifth wheel, or iii. kingpin, or iv. bolster attachment, or v. hoist, hydraulic cylinder of a tipping body or any other device that may place a concentrated load on the chassis. 3. Repairs to a coaming rail that supports a load anchorage point or J-hook, or that secures a load-rated curtain. 4. Modifications carried out **on or after 1 April 2005** that may result in increased stress to a localised area of the chassis or significant redistribution of the load over the chassis (eg fitting of a hoist, crane, tipping body, or other special equipment, etc.). For modifications carried out **before 1 April 2005** it is up to the vehicle inspector to determine if certification is required. Individual certification is only required when the vehicle inspector determines, on reasonable grounds, that the component presents a safety risk.	1. Repairs to a non-structural component of a monocoque body (eg a body panel). 2. Repairs to a first failure of a chassis cross member except a repair listed in the left-hand column. 3. Repairs to a coaming rail that does not support a load anchorage point or J-hook or does not secure a load-rated curtain. 4. Any modification or repair likely to have been carried out before 1 January 1997 (modifications and repairs before this date generally required certification but for inspection purposes no evidence of this is required). 5. Any repair or modification not listed in the left-hand column unless the vehicle inspector considers that certification is required because the modification or repair has affected the vehicle's safety performance (a second opinion from an expert may be needed).

Note 6

Welding carried out as part of a chassis modification on or after 1 April 2005 required certification. However, that was not made clear in this VIRM. Consequently, welding carried out as part of a modification between 1 April 2005 and 31 December 2024 can remain uncertified provided the vehicle inspector is satisfied that the vehicle's safety performance is unaffected.

Figure 3-1-3. Rust heave limits

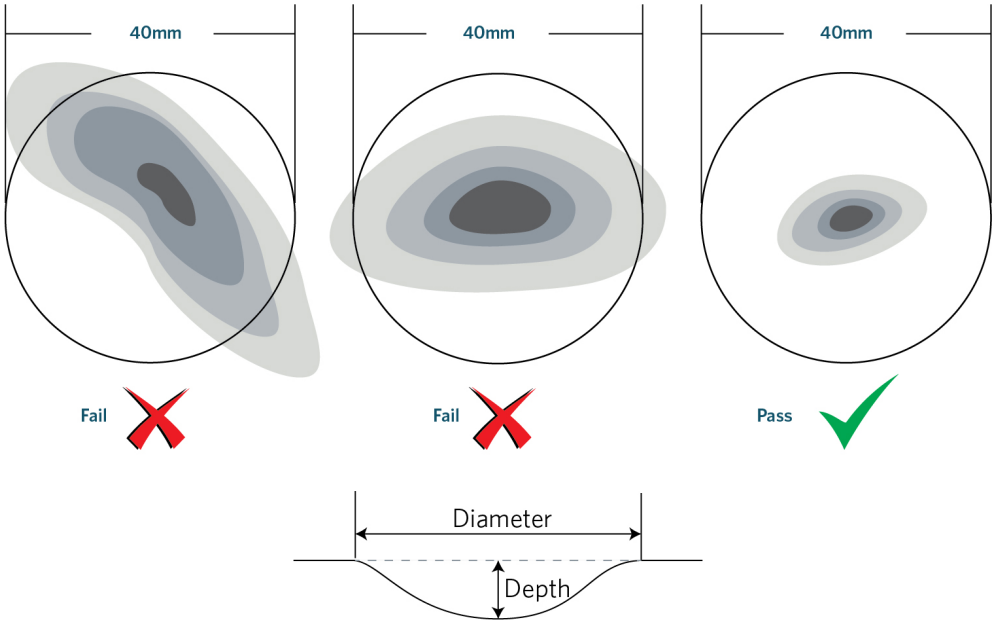


Note: where the flanges are of different thickness, ***t*** shall be taken as the minimum of these.

Rust heave beyond the limits described above is acceptable only if an HVS certifier with the HVEC category has confirmed in writing that at the time of inspection the identified chassis rust heave on the vehicle remains within safe tolerance of the vehicle's state of manufacture. The identity of the HVS certifier must be recorded in the Landata GNOTE page. This assessment is only valid for that specific CoF inspection.

Regardless of any expiry date, an inspector may refer the vehicle to an HVS certifier if they suspect that the safety of the vehicle is compromised, eg due to excessive corrosion or chassis cracking. If the chassis is repaired, an LT400 is required.

Figure 3-1-4. Deformation limits



Summary of legislation

Applicable legislation

- Land Transport Rule: Heavy Vehicles 2004.

Mandatory equipment

1. A sliding chassis must be fitted with:

    a) an effective locking device to prevent inadvertent extension or separation, and

    b) endstops at the end of the slideway to prevent the separation of the sliding parts if the primary locking device fails.

2. The body of a vehicle, such as a tank body for transporting bulk liquid; a tipping body for transporting sand, grain or other bulk goods; or other types of body that are constructed to contain the transported goods without the use of lashings, chains or other devices, must be specifically designed to contain that type and size of load.

Condition and performance

3. The following must be of adequate strength for all conditions of loading and operation for which the vehicle was constructed:

    a) the chassis and body of the trailer, and

    b) the body of a trailer of monocoque construction, and

    c) any other load-bearing structure.

4. The locking of a sliding chassis locking device must be readily verifiable by visual inspection.

5. A sliding chassis locking device must be effective.

6. If a sliding chassis locking device incorporates a system that provides energy for its operation, the device must remain fully engaged in the locking position, or the locking action must be initiated immediately, if the energising system fails.

7. Load-securing equipment that is fitted to a vehicle must be constructed to ensure that the load can be securely contained on the vehicle under all conditions of loading and operation for which the vehicle was constructed.

Modification and repair

8. A modification or repair that affects the vehicle structure must be inspected and certified by an HVS certifier of category HVEC or HMCD unless the vehicle:

a) is excluded from the requirement for HVS certification (Table 3-1-1), and

b) has been inspected in accordance with the requirements in this manual, including those for equipment, condition and performance.

Page amended **10 March 2025** (see **amendment details**)

3-2 Stability

Reasons for rejection

Mandatory requirement

1. A class TD trailer, other than one listed in Table 3-2-1, that is presented with a body capable of achieving a load height exceeding 2.8m from the ground does not have proof of Static Roll Threshold (SRT) certification at 0.35g.

Modification

2. A modification or repair since 1 July 2000 affects the vehicle stability and:

a) is not excluded from the requirements for HVS certification (Table 3-2-2), or

b) the modification is not for the purpose of law enforcement or the provision of emergency services, or

c) is missing proof of HVS certification, ie the vehicle has been modified or repaired, and:

i. no LANDATA record has been entered, or

ii. no valid **LT400** form from a Level 1 or Level 2 SRT certifier has been presented.

Note 1 Definitions

High-productivity motor vehicle (HPMV) means a heavy motor vehicle or heavy combination vehicle that carries a divisible load and with or without a load:

a) exceeds a gross mass of 44,000kg, or

b) varies from a dimension requirement in Table 2-2-3, section 2-2 (other than width, height or ground clearance), or

c) both (a) and (b), and

d) operates on an HPMV permit issued by a road controlling authority.

Road controlling authority means the authority, body or person having control of the road (eg the NZTA, a regional council or an authorized delegate).

Note 2

For the avoidance of doubt, a high-productivity motor vehicle must comply with minimum SRT requirements.

Note 3

When measuring the height of a tipper body any lifting ram extending above the rim of the tipper body should not be included in the calculation of the height of the body.

Table 3-2-1. Class TD trailers that are not required to comply with SRT

- An overdimension trailer (other than a high-productivity motor vehicle) (Note 1) (Note 2)
- A trailer operating under an overweight permit (other than a high-productivity motor vehicle) (Note 1) (Note 2)
- A trailer first registered before 1 January 1940
- A vehicle recovery service vehicle that is designed principally to transport a heavy motor vehicle.

Table 3-2-2. Requirements for HVS certification

HVS certification is required	HVS certification is not required
A modification affects the trailer's SRT compliance (eg deck, body, suspension, different sized wheels or tyres).	Any repair or modification not listed in the left-hand column unless the vehicle inspector considers that certification is required because the modification or repair has affected the vehicle's safety performance (a second opinion from an expert may be needed, eg the manufacturer's representative, or a reputable workshop).

Summary of legislation

Applicable legislation

- Land Transport Rule: Vehicle Dimensions and Mass 2016.

Mandatory requirement

1. A class TD trailer, other than one listed in Table 3-2-1, with a body or load height exceeding 2.8m from the ground must comply with a Static Roll Threshold (SRT) of at least 0.35g.

Specialist certification

2. Compliance with SRT must be certified by a person approved as a Level 1 or Level 2 SRT certifier.

Modification and repair

3. A modification or repair, on or after 1 April 2002, that affects the stability of a heavy trailer must be inspected and certified by an HVS certifier, unless the vehicle:

a) is excluded from the requirements for HVS certification (Table 3-2-2), and

b) has been inspected in accordance with the requirements in this manual, including those for equipment, condition and performance.

Page amended **1 April 2023** (see **amendment details**).