Vehicle structure

Summary of legislation

Applicable legislation

- Land Transport Rule: Vehicle Standards Compliance 2002, section 7.4
- Traffic Regulations 1976: Regulation 80

Permitted equipment

1. A trailer may be fitted with hinged panels.

Condition

2. A vehicle must:
   a) not be so affected by corrosion or weakening of its structure, that is apparent by visual examination, so that the vehicle is unsafe to operate, and
   b) be safe to be operated, and
   c) have been constructed using components and materials that are fit for the purpose, and
   d) be within safe tolerance of its state when manufactured or modified.

Reasons for rejection

Condition

1. The structure of the vehicle (shaded areas of **Figure 3-1-2**) has visible:
   a) deformation from the original shape that has affected the vehicle's structural integrity **(Note 3)**, or
   b) cracking, or
   c) fracture, or
   d) corrosion damage **(Note 1)** that is individually larger than 50 mm in diameter **(Figure 3-1-1)**, or
   e) poor repairs **(Note 2)** that have not returned the structure to within a safe tolerance of when it was manufactured **(Note 3)**, such as:
      i. filler has been used in an attempt to conceal corrosion damage or deformation of a component
      ii. a high strength steel component has been heated.
2. A hinge for a panel is not securely attached to both the vehicle body and to the door or other hinged panel due to loose connections, corrosion or other damage.
3. There is corrosion damage within 150 mm of the hinge of a hinged panel **(Figure 3-1-3)**.
4. There is corrosion damage within 150 mm of the latch of a hinged panel **(Figure 3-1-3)**.
5. A hinged panel does not remain secure in a closed or locked position.

Note 1 Corrosion damage is where the metal has been eaten away, which is evident by pitting. The outward signs of such corrosion damage is typically displayed by the lifting or bubbling of paint. In extreme cases the area affected by the corrosion damage will fall out and leave a hole.

Note 2 Repair means to restore a damaged or worn vehicle, its structure, systems, components or equipment to within safe tolerance of its condition when manufactured, including replacement with equivalent undamaged or new structures, systems, components or equipment.

Note 3 The vehicle inspector may request additional relevant information from a repairer or other relevant person.

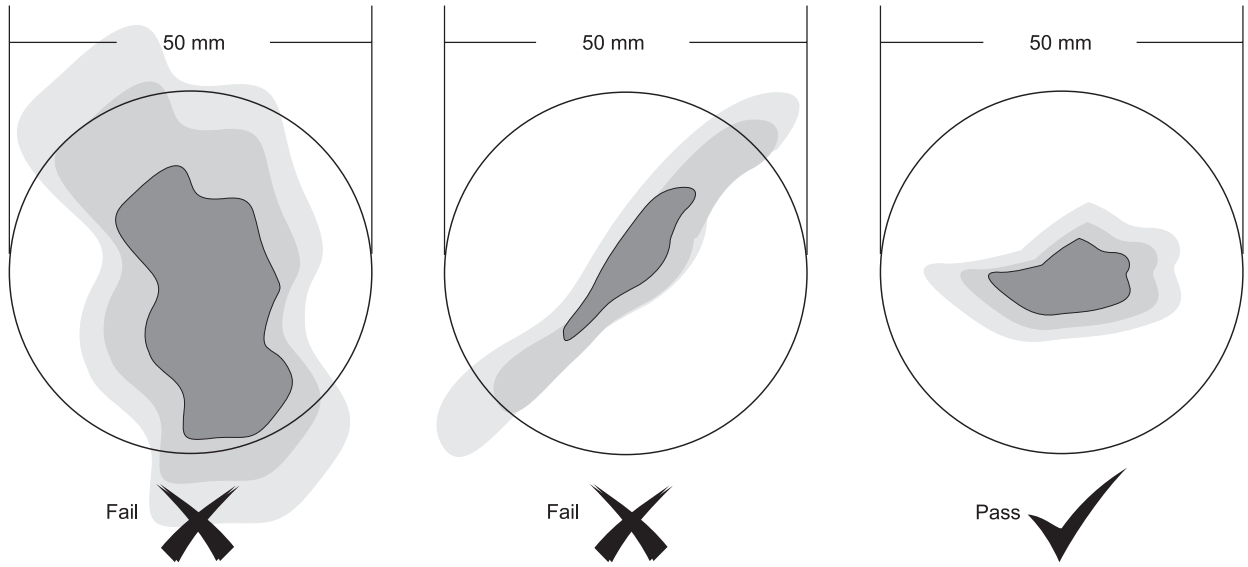


Figure 3-1-1. Corrosion damage 50 mm diameter limit

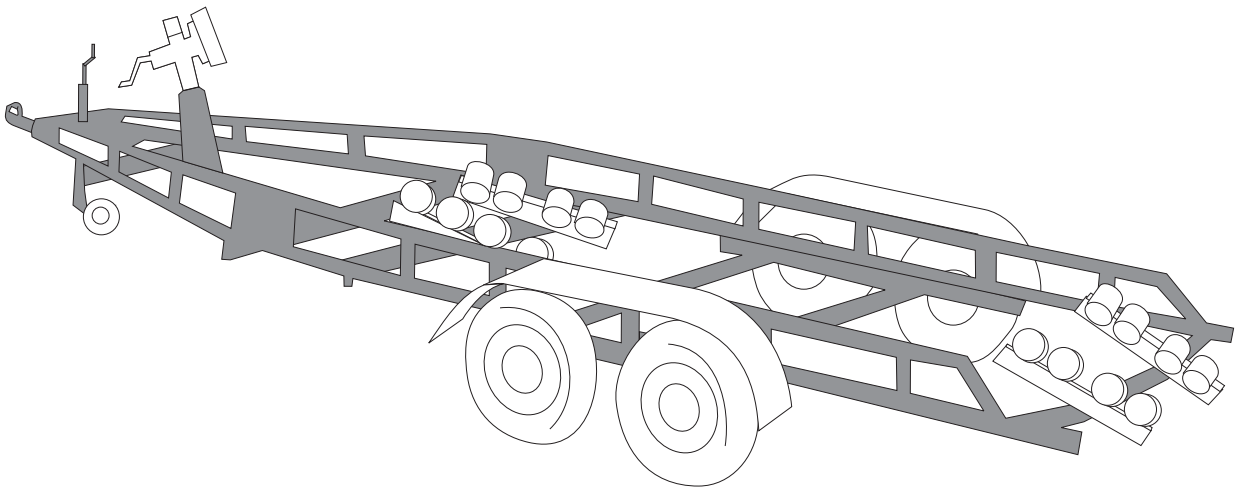


Figure 3-1-2. Shaded areas referred to in 'Condition' above

These include chassis, cross members and subframes, load-bearing monocoque body structures, and the body on a trailer with a separate chassis. Other sections also contain 'reasons for rejection' and diagrams relating to specific vehicle components.

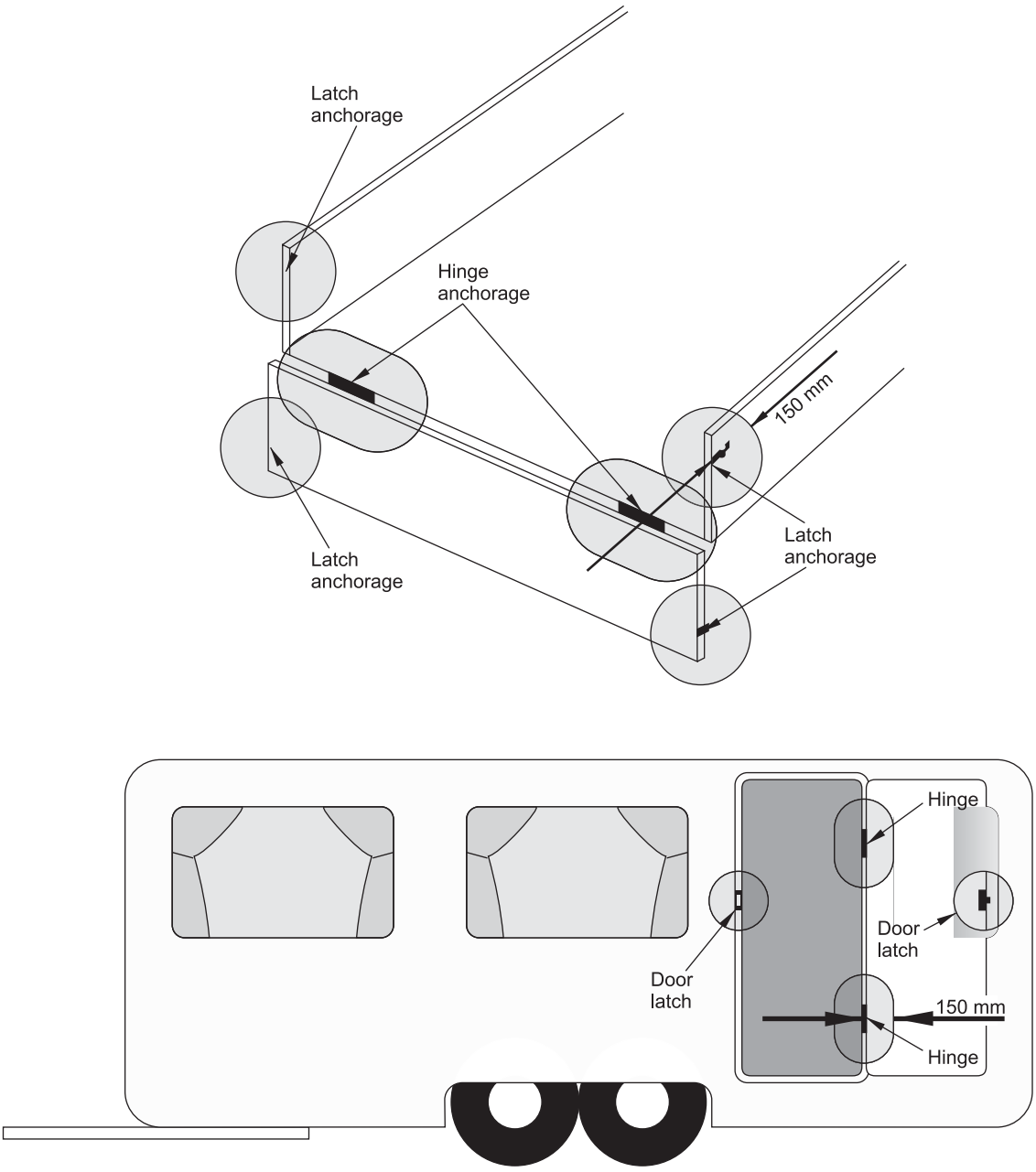


Figure 3-1-3. Hinge and latch anchorages

No corrosion damage is allowed within 150 mm of a circle around the outside of hinge or latch components.

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
   b) the body of a trailer of monocoque construction
4. Any other load-bearing structure.
5. The locking of a sliding chassis locking device must be readily verifiable by visual inspection.
6. A sliding chassis locking device must be effective.
7. 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.
8. 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

9. A modification or repair that affects the vehicle structure must be inspected and certified by a HVS certifier of category HVEC, HVMC or HVIC, 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.

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. The chassis **(Note 1)** 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
   d) significant rust heave that exceeds the limits in **Figure 3-1-4**, 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
      ii. a high-strength steel component has been heated
      iii. a component has been strengthened.
   f) loose 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.
3. 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.

Reasons for rejection

4. The locking of a sliding chassis locking device is not readily verifiable by visual inspection.
5. A sliding chassis locking device has wear or damage, such as a worn or bent pin, so that it is not effective.
6. A sliding chassis locking device does not operate correctly.
7. A sliding chassis end stop is:
   a) missing, or
   b) insecure, or
   c) damaged.

Modification and repair

8. 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, ie:
      i. the vehicle was modified or repaired before the last CoF inspection and no LANDATA record has been entered, or
      ii. the vehicle was modified or repaired since the last CoF inspection and no valid LT400 form from a HVS certifier of category HVEC, HVMC or HVIC has been presented.

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. Repairs to a chassis cross-member that is: a) the first or last cross-member of the chassis b) a cross-member that is fitted within 500 mm of an engine mount, transmission mount, or suspension support c) a cross-member to which a driveshaft centre bearing is fitted d) a cross member that supports any of the following: i. ball-race turntable ii. fifth wheel iii. kingpin iv. bolster attachment 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 that affect the chassis, including fitting of a hoist, crane, tipping body or other special equipment which may result in increased stress to a localized area of the chassis or significant redistribution of the load over the chassis, as determined by an HVS certifier.	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 1/1/1997. (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 VI 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 1 Definitions

Body means the 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.

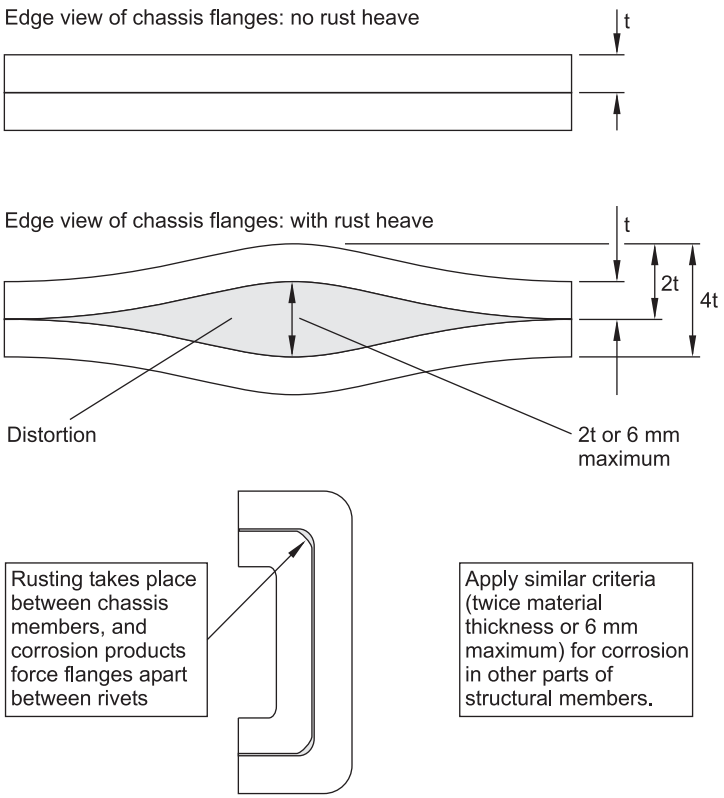
Chassis assembly means a chassis with running gear attached and, as applicable, engine, transmission and steering system attached.

Note 2 Rust stains can indicate fretting or movement between two components, eg as a result of loose fasteners or cracking.

Note 3 Chassis cracking is most likely to occur in the following areas:

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.



Rust heave beyond the limits described above is acceptable only if an HVS certifier has confirmed this in writing. The vehicle may continue without repair until an expiry date specified by the HVS certifier. Where no expiry date is specified the vehicle must be referred to an HVS certifier for another assessment at the next CoF inspection. Regardless of any expiry date, an inspector may refer the vehicle to an HVS certifier if he/she suspects 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 3-1-3. Rust heave limits

Summary of legislation

Applicable legislation

- Land Transport Rule: Vehicle Dimensions and Mass 2002

Mandatory requirement

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

Specialist certification

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

Modification and repair

3. A modification or repair, on or after 1/4/2002, that affects the stability of a heavy trailer must be inspected and certified by an HVS certifier, unless the vehicle:
4. is excluded from the requirements for HVS certification **(Table 3-2-2)**, and
5. has been inspected in accordance with the requirements in this manual, including those for equipment, condition and performance.

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 or load height exceeding 2.8 m from the ground does not have proof of Static Roll Threshold (SRT) certification.

Modification

2. A modification or repair since 1/7/2000 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:
      i. the vehicle was modified or repaired before the last CoF inspection and no LANDATA record has been entered, or
      ii. the vehicle was modified or repaired since the last CoF inspection and no valid LT400 form from a Level 1 or Level 2 SRT certifier has been presented.

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

• An overdimension trailer
• A trailer operating under an overweight permit
• 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's compliance (eg deck, body, suspension, different sized wheels or tyres).	Any repair or modification not listed in the left-hand column unless the VI 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, reputable workshop).