

Vehicle structure

- 3-1 Structure (including frontal impact)
- 3-2 Stability
- 3-3 PSV roof racks



Summary of legislation

Applicable legislation

- Traffic Regulations 1976: Reg. 80
- Land Transport Rule: Frontal Impact 2001

Condition

1. A vehicle must not be affected by corrosion or weakening of its structure, that is apparent by visual examination, so that the vehicle is unsafe to operate.
2. The performance of a frontal impact occupant protection system must not be affected by any factor, including corrosion, structural damage, material degradation, inadequate repair, the fitting of additional equipment, or the removal of equipment.

Modification

3. A modification that affects the integrity of the vehicle structure must be inspected and certified by an LVV specialist certifier, unless the vehicle:
 - a) is excluded from the requirement for LVV specialist 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

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 1** and **Note 3**), or
 - b) cracking, or
 - c) fracture, or
 - d) corrosion damage (**Note 2**) that is individually larger than 50 mm in diameter (**Figure 3-1-1**), or
 - e) corrosion damage within 150 mm of the top of an A-pillar (**Figure 3-1-2**), or
 - f) any corrosion that the inspector considers has caused weakening of a load-bearing structure (**Note 5**), or
 - g) poor repairs that have not returned the structure to within a safe tolerance of when it was manufactured (**Note 3** and **Note 5**), 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
 - iii. a component has been strengthened.

Modification (**Note 4**)

2. The performance of the frontal impact occupant protection system may have been affected by a modification, including an added or removed object, fitting or component, after the vehicle was manufactured if the vehicle has a GVM of 2500 kg or less and is:
 - a) a class MA motor vehicle manufactured from 1/3/1999, or
 - b) a class MA motor vehicle that was first registered in New Zealand from 1/4/2002, except those that were more than 20 years old on 1/4/2002.
 - c) a class MB or MC motor vehicle manufactured from 1/10/2003.

Reasons for rejection

3. A modification affects the vehicle structure – including an object or fitting affixed after manufacture that is welded to the chassis, sub-frame, cross member or body of a monocoque structure, and
 - a) is not excluded from the requirements for LVV specialist certification (**Table 3-1-1**), and
 - b) is missing proof of LVV specialist certification, ie:
 - i. the vehicle is not fitted with a valid low volume vehicle certification plate, or
 - ii. the operator is not able to produce a valid modification declaration or authority card.

Table 3-1-1. Modifications that do not require LVV certification

Fitting of or modification to:	LVV certification is not required provided that:
Cosmetic body kits and components (including utility canopies)	<ul style="list-style-type: none"> • the fitting system does not weaken the vehicle structure, and • the kit or components do not present any forward-facing external projections, and • none of the frontal impact components have been removed where the vehicle is required to comply with a frontal impact occupant protection standard, and • the performance of any lamps is not affected as a result of the kit or components.
Fibreglass replacement panels (that are substituted for OE panels)	<ul style="list-style-type: none"> • the OE panels being replaced do not contribute to the strength of the vehicle structure, including side impact resistance, and • the replacement panels use OE attachment points.
Seatbelt anchorages retrofitted after 1/1/1992 in vehicles of classes MA, MB, MC or after 1/3/1999 in vehicles of other classes	<ul style="list-style-type: none"> • the anchorage is a top tether anchorage for a child seat or child harness, and • the installation is carried out in accordance with the instructions of the seat or harness manufacturer.
Suspension braces (strut tower braces)	<ul style="list-style-type: none"> • there are no structural changes to the body or suspension mounting points.
A-frames and bullbars	<ul style="list-style-type: none"> • the vehicle is not required to comply with frontal impact occupant protection standard (note that a few bullbars are certified as frontal impact compliant)

Fitting of or modification to:	LVV certification is never required:
Bumper bar (removal or change)	<ul style="list-style-type: none"> • in-service requirements for condition and performance must be met.
Towbars	
Any modification for the purposes of law enforcement or the provision of emergency services	
Roof racks fitted to a vehicle other than a PSV. (Refer to 3-3 for PSV requirements.)	

Note 1 The structure of a vehicle may incorporate crumple zones that form part of a frontal impact occupant protection system.

Note 2 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 3 The vehicle inspector may request additional relevant information from a repairer or other relevant person. The vehicle inspector should withhold the warrant of fitness if there is reason to believe that the vehicle has:

- a) structural damage, or
- b) inadequate structural repair(s), or
- c) corrosion damage

to the extent that it could affect the vehicle's structural strength or one of the vehicle's safety requirements. If the owner questions the decision, the vehicle inspector should recommend the vehicle owner obtain further written assessment from a panel beater.

Note 4 Modify means to change a vehicle from its original state by altering, substituting, adding or removing a structure, system, component or equipment, but does not include repair.

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 5 Where the inspector is presented with a Nissan Terrano or Nissan Mistral vehicle of the type that is fitted with a two-layer (double skin) floor panel, the inspection procedure in Technical Bulletin 2 must be followed.

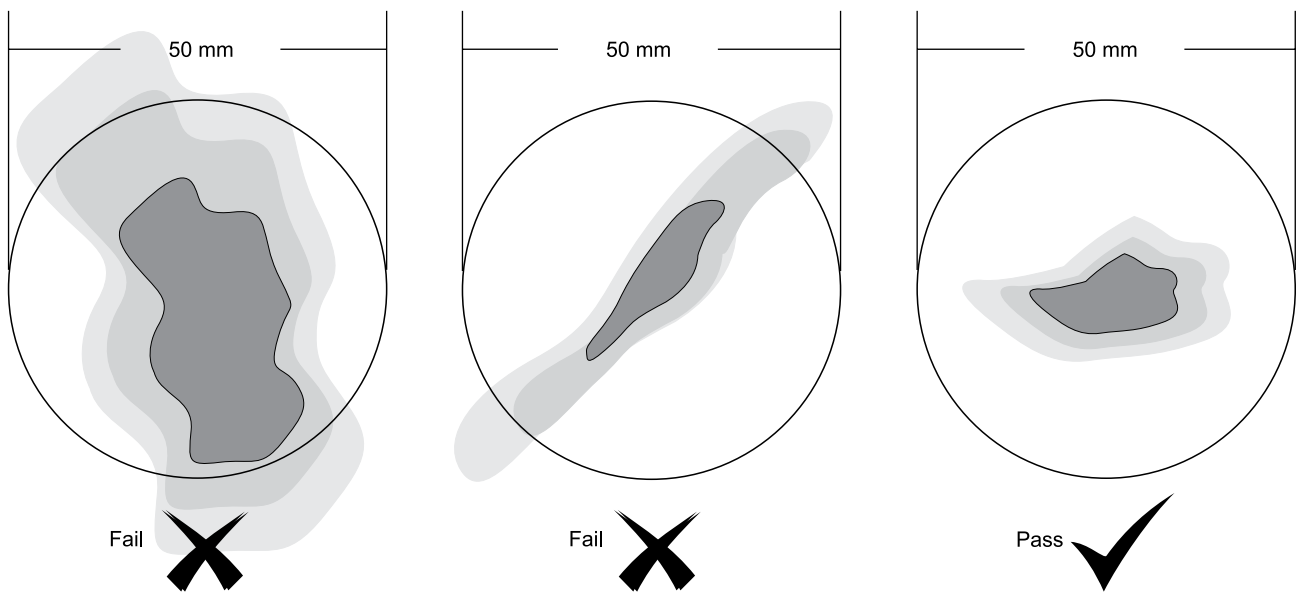


Figure 3-1-1. Corrosion damage 50 mm diameter limit

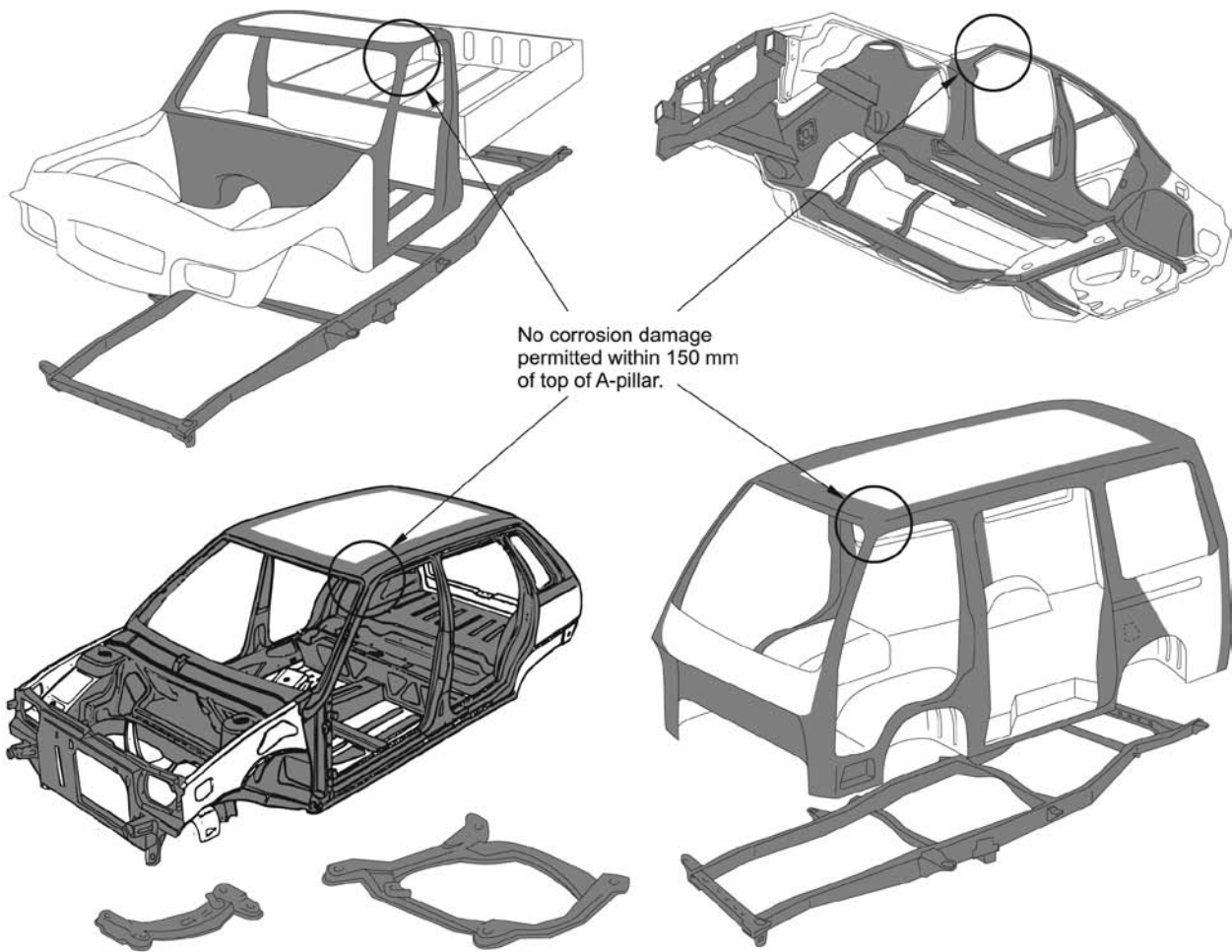


Figure 3-1-2. Shaded areas referred to in 'Condition' above

These include chassis, cross members and subframes, load-bearing monocoque body structures, body mounts, and the body on a vehicle with a separate chassis. Other sections also contain 'reasons for rejection' and diagrams relating to specific vehicle components. See also figures for corrosion limits to hinge and latch anchorages (section 6-1), seatbelt anchorages (section 7-5), and front or rear suspension anchorages (section 9-1).

Summary of legislation

Applicable legislation

- Land Transport Rule: Heavy Vehicles 2004

Mandatory equipment

1. A sliding chassis must be fitted with:
 - a) a 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.
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 vehicle
 - b) the body of a vehicle of monocoque construction
 - c) any other load-bearing structure.
4. The locking of a sliding chassis locking device must be readily verifiable by visual inspection or the vehicle must be equipped with a visual or audible alarm to warn the driver if the chassis is not in one of the locking positions.
5. An alarm must be visible or audible from the driver's seating position, and the alarm must operate when the vehicle's engine is running, except when the parking brake is fully applied or when the gear selector of a vehicle with an automatic transmission is in the 'park' position
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 locked 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 3-1-2**), 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) a 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 damage so that the vehicle is no longer of adequate strength for all conditions of loading and operation for which the vehicle was constructed, such as:
 - 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
 - ii. a high-strength steel component has been heated
 - 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
 - iii. seat, seatbelt or load anchorages, or
 - iv. brake system, or
 - v. mandatory lighting equipment, or
 - vi. towing connections, or
 - vii. transmission, or
 - viii. cab or vehicle body.

Reasons for rejection

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.
4. A tipping body hinge, body guide or locking device has deteriorated so that it is not effective in securing the body to the chassis.
5. The locking of a sliding chassis locking device is not either:
 - a) readily verifiable by visual inspection, or
 - b) the vehicle is not equipped with a visible or audible alarm to warn the driver if the chassis is not locked in one of the locking positions. **(Note 5)**
6. A sliding chassis locking device has wear or damage, such as a worn or bent pin, so that it is not effective.
7. A sliding chassis locking device does not operate correctly.
8. A sliding chassis end stop is:
 - a) missing, or
 - b) insecure, or
 - c) damaged.
9. A bin securing device does not operate correctly.

Modification and repair

10. A modification or repair affects the vehicle structure and:
 - a) is not excluded from the requirements for HVS certification (**Table 3-1-2**), 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 HVS certifier of category HVEC, HVMC or HVIC has been presented.

Table 3-1-2. Requirements for HVS certification

HVS certification is required	HVS certification is not required
<ol style="list-style-type: none"> 1. Repairs to a structural component of a monocoque body. 2. Repairs to a chassis cross-member that is: <ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> i. ball-race turntable ii. tow coupling iii. fifth wheel iv. kingpin v. bolster attachment vi. 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 certified 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. 	<ol style="list-style-type: none"> 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 (including a stock-crate J-hook) or that 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

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.

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

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.

Note 5 An alarm must be visible or audible from the driver's seating position, and the alarm must operate when the vehicle's engine is running, except when the parking brake is fully applied or when the gear selector of a vehicle with an automatic transmission is in the 'park' position.

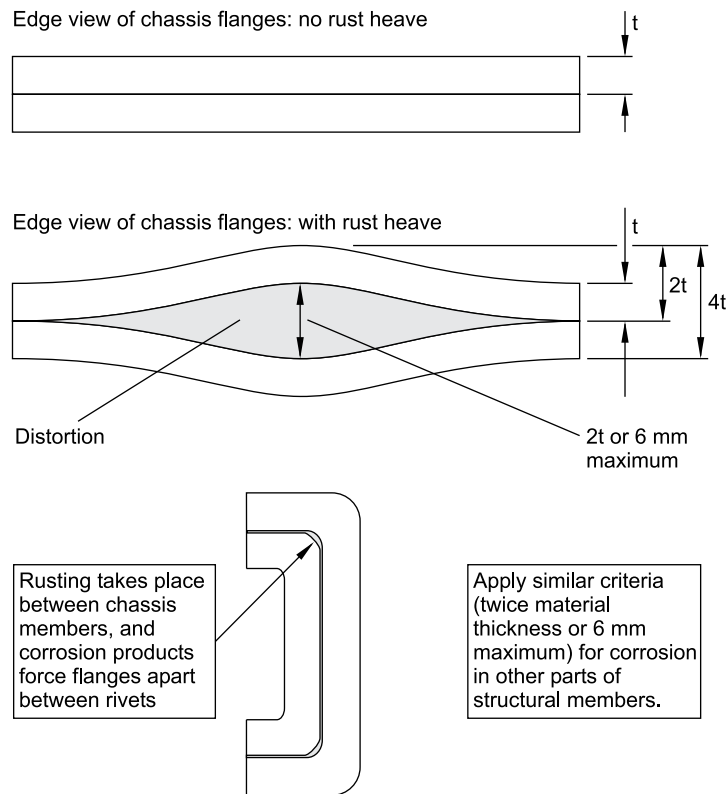


Figure 3-1-3. Rust heave limits

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.

Summary of legislation

Applicable legislation

- Land Transport Rule: Passenger Service Vehicles 1999

Mandatory equipment

1. An open-bodied vehicle that entered service as a PSV in New Zealand on or after 1 January 2001 must:
 - a) on the open-bodied part of the vehicle have side walls that extend at least 450 mm above the highest point of the uncompressed seat cushion, and
 - b) have a permanent framework to provide reasonable protection for the occupants in the case of the vehicle rolling over, and
 - c) on any upper deck have drains to prevent water from collecting on it or draining into the body of the vehicle.

Condition

2. Refer to general vehicle pages.
3. The structural strength must be maintained throughout the service life of the PSV.
4. The superstructure must be of robust design, and made of materials fit for the purpose.
5. The body of a PSV must be fit for its purpose and securely fixed to the chassis.
6. The structural strength of a PSV must be sufficient to provide reasonable protection for the occupants in the event of roof or wall deformation resulting from the vehicle rolling over.

Modification

7. Refer to general vehicle pages.
8. A modification that affects the vehicle structure must be inspected and certified by a LVV specialist certifier.

Reasons for rejection

Mandatory equipment

1. An open-bodied vehicle that entered service as a PSV in New Zealand on or after 1 January 2001:
 - a) has side walls that are less than 450 mm above the highest point of the uncompressed seat cushion on the open-bodied part of the vehicle, or
 - b) does not have a permanent framework in addition to the side walls to provide reasonable protection for the occupants in the case of the vehicle rolling over.
 - c) on any upper deck does not have any drains to prevent water from collecting on it or draining into the body of the vehicle.

Condition

2. Refer to general vehicle pages.
3. The structural strength of a PSV has been reduced so that it does not provide reasonable protection for the occupants in the event of roof or wall deformation resulting from the vehicle rolling over, eg:
 - a) structural parts of the superstructure have been removed or substituted with parts that are of insufficient strength or not fit for purpose.
4. A body to chassis attachment, such as a weld, or fastener is:
 - a) missing, or
 - b) loose, or
 - c) cracked, or
 - d) broken, or
 - e) significantly corroded, or
 - f) otherwise in poor condition.

Modification

5. Refer to general vehicle pages.

Summary of legislation

Applicable legislation

- Land Transport Rule: Passenger Service Vehicles 1999

Mandatory equipment

1. An open-bodied vehicle that entered service as a PSV in New Zealand on or after 1 January 2001 must:
 - a) on the open-bodied part of the vehicle have side walls that extend at least 450 mm above the highest point of the uncompressed seat cushion, and
 - b) have a permanent framework to provide reasonable protection for the occupants in the case of the vehicle rolling over, and
 - c) on any upper deck have drains to prevent water from collecting on it or draining into the body of the vehicle.
2. A heavy open-bodied vehicle that entered service as a PSV in NZ on or after 1/7/2001 must have:
 - a) a front screen that extends at least 1 m above the highest uncompressed seat cushion, and at least 1.95 m above the upper floor level, and
 - b) a railing, or another structure through which a sphere of 125 mm diameter cannot be passed, that extends above the side walls to a height of 610 mm above the highest point of the uncompressed seat cushion.

Condition

3. Refer to heavy vehicle pages.
4. The structural strength must be maintained throughout the service life of the PSV.
5. The superstructure must be of robust design, and made of materials fit for the purpose.
6. The body of a PSV must be fit for its purpose and securely fixed to the chassis.
7. The structural strength of a PSV must be sufficient to provide reasonable protection for the occupants in the event of roof or wall deformation resulting from the vehicle rolling over.

Modification and repair

8. Refer to heavy vehicle pages.

Reasons for rejection

Mandatory equipment

1. An open-bodied vehicle that entered service as a PSV in New Zealand on or after 1 January 2001:
 - a) has side walls that are less than 450 mm above the highest point of the uncompressed seat cushion on the open-bodied part of the vehicle, or
 - b) does not have a permanent framework in addition to the side walls to provide reasonable protection for the occupants in the case of the vehicle rolling over, or
 - c) on any upper deck does not have drains to prevent water from collecting on it or draining into the body of the vehicle.
2. On a heavy open-bodied vehicle that entered service as a PSV in New Zealand on or after 1 July 2001:
 - a) a front screen to extend above the upper floor level:
 - i. is missing, or
 - ii. does not extend to at least 1 m above the highest point of the uncompressed seat cushion, or
 - iii. does not extend to at least 1.95 m above the upper floor level, or
 - b) a railing, or another structure, to extend above the side walls:
 - i. has a railing above the side walls through which a sphere of 125 mm diameter can be passed, or
 - ii. has a railing that does not extend above the side walls to a height of at least 610 mm above the highest point of the uncompressed seat cushion.

Condition

3. Refer to heavy vehicle pages.

Reasons for rejection

4. The structural strength of a PSV has been reduced so that it does not provide reasonable protection for the occupants in the event of roof or wall deformation resulting from the vehicle rolling over, eg:
 - a) structural parts of the superstructure have been removed or substituted with parts that are of insufficient strength or not fit for purpose.
5. A body to chassis attachment, such as a weld, or fastener is:
 - a) missing, or
 - b) loose, or
 - c) cracked, or
 - d) broken, or
 - e) significantly corroded, or
 - f) otherwise in poor condition.

Modification

6. Refer to heavy vehicle pages.

Summary of legislation

Applicable legislation

- Land Transport Rule: Passenger Service Vehicles 1999
- Land Transport Rule: Vehicle Standards Compliance 2002

Modification

1. A modification, on or after 1/7/2000, that affects the stability of a light PSV must be inspected and certified by an LVV specialist vehicle certifier, unless the vehicle:
 - a) is excluded from the requirements for LVV specialist certification (**Table 3-2-1**), and
 - b) has been inspected in accordance with the requirements in this manual, including those for equipment, condition and performance.

Reasons for rejection

Modification

1. A modification from 1/7/2000 affects the vehicle stability and:
 - a) is not excluded from the requirements for LVV certification (**Table 3-2-1**), or
 - b) is not for the purpose of law enforcement or the provision of emergency services, or
 - c) is missing proof of LVV certification, ie the vehicle is not fitted with a valid low volume vehicle certification plate.

Table 3-2-1. Requirements for LVV certification

LVV certification is required	LVV certification is not required
<ol style="list-style-type: none"> 1. fitting of components to the roof, eg a roof-rack or an air conditioning unit. 2. changes in floor height or geometry, eg due to changes to suspension, wheel or tyre size. 	<ol style="list-style-type: none"> 1. Any modification not listed in the left-hand column unless the VI considers that certification is required because the modification has affected the vehicle's safety performance (a second opinion from an expert may be needed).

Summary of legislation

Applicable legislation

- Land Transport Rule: Passenger Service Vehicles 1999
- Land Transport Rule: Vehicle Standards Compliance 2002

Modification and repair

1. A modification or repair, on or after 1/7/2000, that affects the stability of a heavy PSV 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.

Reasons for rejection

Modification and repair

1. 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 an HVS certifier has been presented.

Table 3-2-2. Requirements for HVS certification

HVS certification is required	HVS certification is not required
<ol style="list-style-type: none"> 1. fitting of components to the roof, eg a roof-rack or an air conditioning unit. 2. changes in floor height or geometry, eg due to changes to suspension, wheel or tyre size. 	<ol style="list-style-type: none"> 1. 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).

Summary of legislation

Applicable legislation

- Land Transport Rule: Passenger Service Vehicles 1999
- Land Transport Rule: Vehicle Standards Compliance 2002

Mandatory requirement

1. A roof-rack that is fitted to a light PSV must have a sign or plate on the left-hand side stating:
 - a) the purpose of the roof-rack, if other than for general baggage, and
 - b) the maximum weight it is allowed to carry, and
 - c) the manufacturer of the roof-rack, and
 - d) either:
 - i. the make, model and registration number of the PSV to which it is fitted, or
 - ii. vehicle identification number or chassis number of the PSV to which it is fitted, or
 - iii. if rated and certified by the vehicle manufacturer or an LVV specialist certifier for a vehicle model, the approval for that vehicle model.

Condition

2. A roof-rack that is fitted to a light PSV must be fitted in accordance with instructions by an LVV specialist certifier.

Modification

3. A modification that affects the roof rack of a light PSV, including the fitting of a roof rack, must be inspected and certified by an LVV specialist certifier.

Reasons for rejection

Mandatory requirement

1. A roof-rack does not have a sign or plate on the left-hand side.
2. A roof-rack sign or plate does not state:
 - a) the purpose of the roof-rack, if other than for general baggage, or
 - b) the maximum weight it is allowed to carry, or
 - c) the manufacturer of the roof-rack, or
 - d) at least one of the following:
 - the make, model and registration number of the PSV to which it is fitted
 - vehicle identification number or chassis number of the PSV to which it is fitted
 - if rated and certified for a vehicle model, the approval for that vehicle model.

Condition

3. The roof rack sign or plate is:
 - a) not securely fitted, or
 - b) not legible.
4. A roof-rack that is fitted to a light PSV:
 - a) is not fitted as appropriate for that particular vehicle make, or
 - b) is not fitted securely, eg, fastenings are missing, broken or loose, or
 - c) shows signs of significant deterioration that affects its ability to hold or retain the rated load.

Modification

5. A modification since 1/7/2000 affects the roof rack, or a roof rack has been fitted since 1/7/2000, and:
 - a) is not for the purpose of law enforcement or the provision of emergency services, or
 - b) is missing proof of LVV certification, ie:
 - i. the vehicle is not fitted with a valid low volume vehicle certification plate.

Summary of legislation

Applicable legislation

- Land Transport Rule: Passenger Service Vehicles 1999
- Land Transport Rule: Vehicle Standards Compliance 2002

Mandatory requirement

1. A roof-rack that is fitted to a heavy PSV must have a sign or plate on the left-hand side stating:
 - a) the purpose of the roof-rack, if other than for general baggage, and
 - b) the maximum weight it is allowed to carry, and
 - c) the manufacturer of the roof-rack, and
 - d) either:
 - ii. the make, model and registration number of the PSV to which it is fitted, or
 - iii. vehicle identification number or chassis number of the PSV to which it is fitted, or
 - iv. if rated and certified by the vehicle manufacturer or a category HVEC, HVIC or HVMC heavy vehicle specialist certifier for a vehicle model, the approval for that vehicle model.

Condition

2. A roof-rack that is fitted to a heavy PSV must be fitted in accordance with instructions by a category HVEC, HVIC or HVMC heavy vehicle specialist certifier.

Modification

3. A modification that affects the roof rack of a heavy PSV, including the fitting of a roof rack, must be inspected and certified by an HVS certifier, unless the vehicle:
 - a) is excluded from the requirements for HVS specialist certification (**Table 3-3-1**), and
 - b) has been inspected in accordance with the requirements in this manual, including those for equipment, condition and performance.

Reasons for rejection

Mandatory requirement

1. A roof-rack does not have a sign or plate on the left-hand side.
2. A roof-rack sign or plate does not state:
 - a) the purpose of the roof-rack, if other than for general baggage, or
 - b) the maximum weight it is allowed to carry, or
 - c) the manufacturer of the roof-rack, or
 - d) at least one of the following:
 - the make, model and registration number of the PSV to which it is fitted
 - vehicle identification number or chassis number of the PSV to which it is fitted
 - if rated and certified for a vehicle model, the approval for that vehicle model.

Condition

3. The roof rack sign or plate is:
 - a) not securely fitted, or
 - b) not legible.
4. A roof-rack that is fitted to a heavy PSV:
 - a) is not fitted as appropriate for that particular vehicle make and model, or
 - b) is not fitted securely, eg, fastenings are missing, broken or loose, or
 - c) shows signs of significant deterioration that affects its ability to hold or retain the rated load.

Modification and repair

5. A modification or repair since 1/7/2000 affects the roof rack, or a roof rack has been fitted since 1/7/2000, and:
 - a) is not excluded from the requirements for HVS certification (**Table 3-3-1**), or
 - b) the modification is not for the purpose of law enforcement or the provision of emergency services, or

Reasons for rejection

- 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 3-3-1. Requirements for HVS certification

HVS certification is required	HVS certification is not required
Fitting a roof rack.	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).