Motorhome Seats – General Information

Introduction:

This information sheet is intended to provide guidance when inspecting seat installations in motorhomes for low volume certification, and contains material presented at a previous LVV Certifier training session, along with supplementary notes for additional information.

Seat and Seatbelt Type:

Motorhomes are allowed a concession on seatbelts in the rear – only lap belts are required. For further information on the number of seats required, and seatbelt type and signage, refer to *LVVTA Information Sheet #03-2006 – Seats and Seatbelts in Motor-homes*. Seating in the rear can be forward, rearward or facing sideways, although there are restrictions on side-facing seats, covered below.

Side-facing seats:

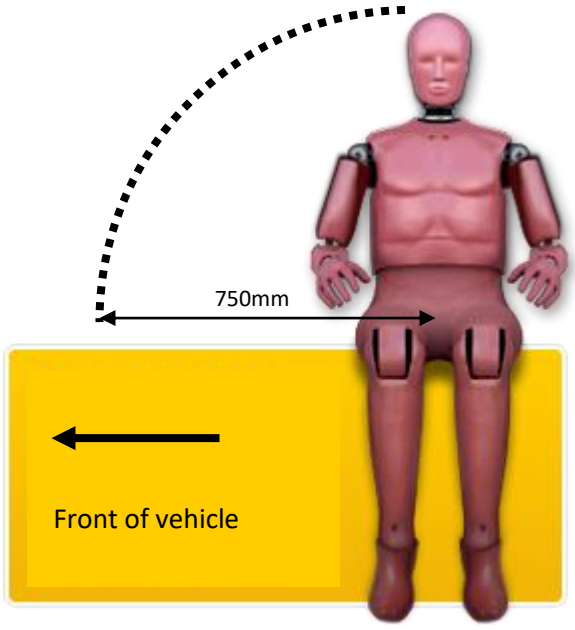
A seat that faces sideways is considered to be significantly less safe than a forward or rearward-facing seat.

The *LVV Seat and Seat Anchorage Standard (185-00)* states that for motor-homes, only one side-facing seat is allowed per side of the vehicle.

One single side-facing seat on its own is considered to be less unsafe than two or more side-facing seats positioned beside each other, because of the potential head-strike situation that arises in a multiple sideways-facing seat situation.

In a frontal impact an occupant wearing a lap belt will rock sideways towards the front of the vehicle and so their head needs clear space.

For the single side-facing seat, there must be no adjacent object within 750 mm forward of the longitudinal centreline of the seat, capable of being contacted by the occupant in the event of a frontal impact.



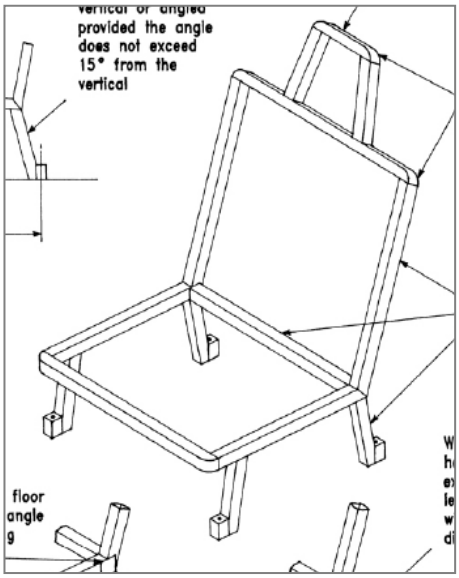
Further to the 750 mm requirement, any adjacent object between 750 mm and 1000 mm of the longitudinal centreline of the seat has to be covered with a high-density energy-absorbing material.

In general, a side-facing seat will be positioned toward the rear of a side bench seat, but must not be positioned in the corner of a U-shaped seating area.

Seat Structure:

Motorhomes often have seating built into the furniture, made from plywood and not secured to the permanent structure of the vehicle. Some even incorporate the seatbelt anchorages. The LVV Seat and Seat Anchorage Standard requires assessment of structural integrity for any seat, and for that seat to be rigidly fixed to a structural part of the vehicle. The strength of wooden seating cannot readily be quantified as the material is not manufactured to a universal standard, so such seats are not acceptable for LVV certification.

A metal frame is a preferred solution to provide the proper structure for the seat, and it is one that is accepted in Australia's individual seat manufacture guidelines (Vehicle Standards Bulletin 5B) – see illustration at right.



As shown, the seat frame should comprise at least a seat base with connected legs fixed directly to the vehicle structure. Ideally a complete box structure will be formed.

An unstressed seat (without seatbelts attached) would not require any calculations to approve the seat structure, but a stressed seat (with seatbelts attached) would ordinarily require calculations to be provided. A variation to this requirement for calculations has been agreed with NZTA, which is that if the frame is built to the following requirements, the lap seatbelt anchorages can be incorporated into the frame and it is not necessary to provide any load calculations:

- a full box frame manufactured from minimum 20 x 20 x 3 mm, or 25 x 25 x 2 mm, square tubing; &
- appropriate triangulation to strengthen the seat frame in the direction of the lap seatbelt loading.

Some modern motorhomes incorporate a seatbelt frame that has been approved to an international standard such as ECE R14, but there is no metal structure for the seat itself.

In order to simplify the rectification of these seats it has also been agreed with NZTA that a metal frame as described above can be attached to the approved seatbelt frame. An illustration of this is shown on an approved twin seatbelt support structure, right, with black lines denoting added seat structure.

Note that the ECE R14 approval relates to the frame, not the connection to the vehicle, so in all cases, the LVV Certifier must ensure that the seatbelt frame is adequately fixed to a structural part of the vehicle.

Consideration must also be given to the effect of any items within the seat frame. Heavy items such as a water tank should have their own mounts capable of withstanding 20g. If any load is borne by the seat frame, then this must be factored into the strength requirements.

The seat back of an unstressed or lap-stressed seat is ordinarily required to have proof that it can withstand a load of 900N per occupant. In the case of a motorhome rear seat, this can be assessed subjectively. In this case, item 3 of formset FS030 should refer to this LVVTA Information Sheet as justification.

Seat Dimensions:

There are no set dimensions for a seat in a motorhome, but the seat does have to be fit for purpose by being of appropriate size and shape. The seat base should not be excessively deep, and the seat back should be of reasonable height to provide lower back support.

Side Door Requirement:

A motorhome side rear door need not be equipped with a burst-proof latch except when a seat is located directly next to the door.

Interior Impact:

A sideways-facing seat must meet the same 'A-zone' interior impact requirements specified within the LVV Interior Impact Standard as any other seating position. Some motorhome seating is placed around a table so this must be capable of being stowed away for travel.

Another consideration for motorhomes is that the attachment of furniture that is located to the rear of any passenger must be adequately strong to prevent collapse in a frontal impact.

The seat back on motorhome rear seating is typically low so solid objects above the seatback should be avoided, such as a horizontal metal window bar.

Head restraints are not required in a motorhome side-facing seat, but a head restraint is required if the seat is a rear-facing seat, or, in the case of a retro-fitted forward-facing seat, a solid structure is positioned within 300 mm from the rearmost part of the seat-back.

European Whole of vehicle type approval:

A motorhome that has European Whole of Vehicle Type Approval, accompanied by the correct label affixed to the vehicle, does not require LVV certification, even if the seating does not meet LVV standards. A vehicle of this type will be dealt with at Entry certification and should not be presented to an LVV Certifier.

Finally:

If any assistance in the use of this Information Sheet is needed, please contact the technical team at the LVVTA office on (04) 238-4343.