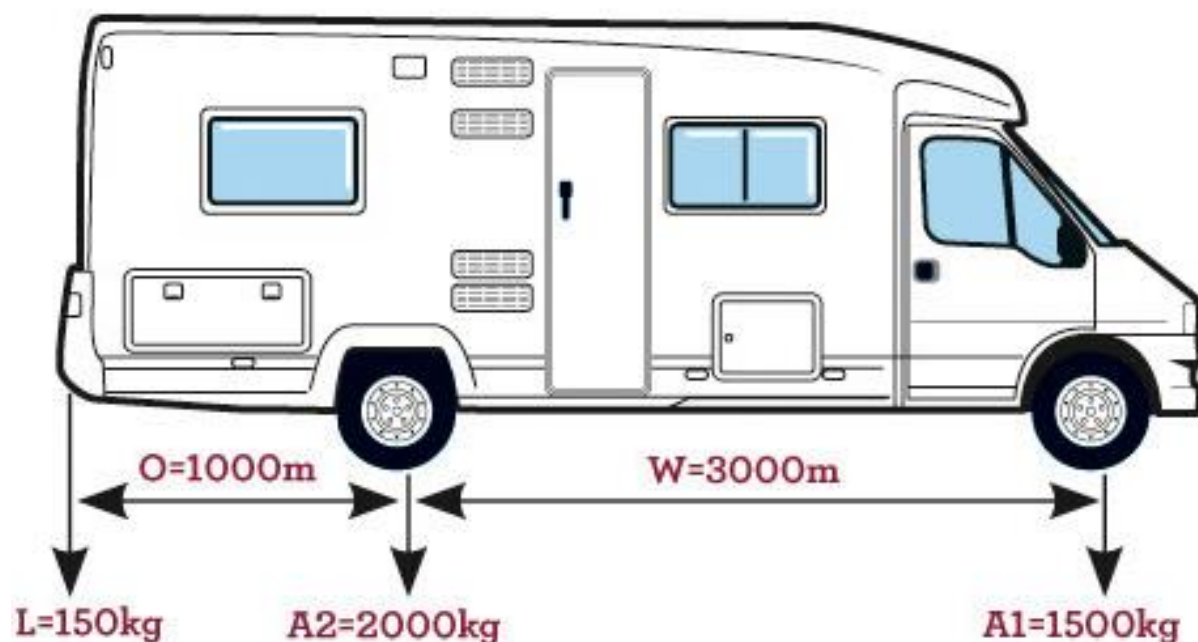


## Rear loading

Before fitting a rear rack to your 'van, consider the following:



**A1** = existing front axle load

(before adding on the new rear load)

**A2** = existing rear axle load

(before adding on the new rear load)

**L** = weight of new rear load

**W** = wheelbase (the distance between the front and rear axle centre-lines)

**O** = overhang (the distance from the rear axle centre to the centre of mass of the new rear load).

Add the figure for the new rear load, and carry out the following calculations:

- New front axle load (new A1) =  $A1 - [L \times (O \div W)]$
- New rear axle load (new A2) =  $A2 + L + (A1 - \text{new A1})$ .

For example, take a 'van with a current front axle load (A1) of 1500kg and a rear axle load (A2) of 2000kg (see diagram). The scooter and its rack have a total mass of 150kg, the vehicle's wheelbase (W) is 3000mm and the overhang (O) is 1000mm. Put those figures into the above equations and the new front axle load will be:  $1500\text{kg} - [150 \times (1000 \div 3000)]$ . This works out at  $1500 - 49.95$  which is a new front axle load of 1450.05kg. Now that we have a new A1 figure, we can move on to the second calculation to get the new rear axle

load:  $2000 + 150 + (1500 - 1450.05)$  is a new load of 2199.95kg. In other words, the scooter and rack would add nearly 200kg to the back axle, while taking almost 50kg off the front axle. You will need to compare these figures to the maximum axle loadings shown on the vehicle plate. If your new rear axle load is greater than that on the plate, then you cannot fit the rack and motor scooter.