

Carrying a Load

A vehicle's suspension is designed to provide optimum handling and comfort under "normal loaded conditions". But what is "normal"?

It has been Pedders experience, to find that many light commercial vehicles, often carry near to maximum capacity on a regular basis. Because of this, we have found that the car and the owner, benefit in increased levels of comfort and improved support and enhanced car control, when an upgraded spring and shock absorber package is fitted.

Likewise, passenger cars that regularly carry the maximum number of occupants, including luggage and in some cases extra equipment, do not perform to their potential in terms of ride comfort, handling and braking without a suspension up grade.



When towing or carrying heavy loads the vehicle will compress the suspension and therefore the suspension travel will become less and reduce the bump stop clearance. Ride comfort, traction, handling steering and braking efficiency will all be adversely affected.

The use of tow hitches, distribute the weight of the towed unit, but do not compensate for the effect of the load on the vehicle's suspension.

Pedders preferred method to restore a vehicle's ride comfort, safety and handling under extra load conditions, is to fit enhanced replacement springs and shock absorbers. The available range of options are all designed to suit the particular needs and applications.

Pedders have the expertise and specialist products to improve ride, handling and safety of most vehicle on Australian roads, including All wheel drive (SUV's), 4 W.D.'s, and light commercial vehicles, as well as the family sedan.

Understanding Load and Distribution:

For example:

- Carrying a load that will not exceed the Original Equipment Manufacturer's Gross Vehicle Mass.
- Distributing the load correctly in the vehicle.
- A tray which is not designed for the vehicle, ie. Too much overhang.



Correct length tray for the wheel base and load carrying capacity.



Incorrect length tray for the wheel base and load carrying capacity.

Load Carrying and Distribution:

It's not just the "Towed Mass" that must be known but the weight placed onto the tow ball, "C".

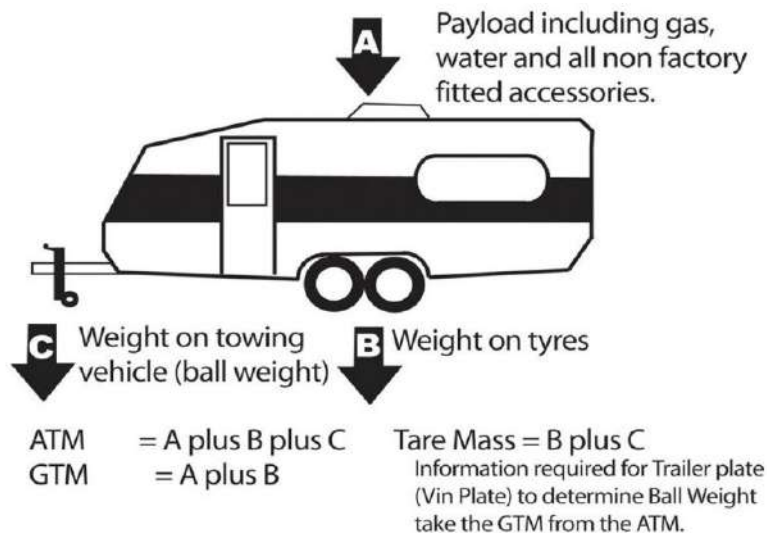
A.T.M. = Aggregated Trailer Mass

G.T.M. = Gross Trailer Mass

G.C.V.M. = Gross Combination Vehicle Mas

Tow Ball Load = Is the proportion of the trailer weight that is applied to the rear of the tow car.

Ball Load specifications are often around 10% of the maximum towing mass specification, however this isn't always the case. European vehicles in particular can have quite low allowable Ball Loads in relation to their towing capacity.

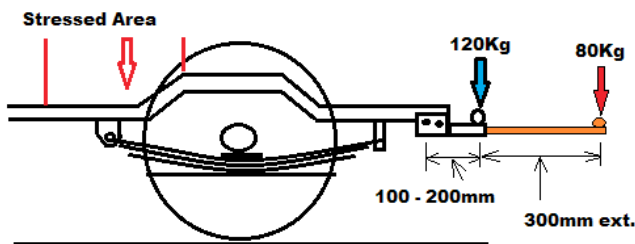


Hitch Extensions:

The fitment of an extension hitch to a tow bar in its self is usually not a problem, but there are a couple of very important points to take into consideration.

For example, say the "Ball weight" permitted for the tow bar was 120kg. When an extension of 300mm has been fitted, the capacity of the "Ball weight" has been dramatically decreased. The maximum capacity is now down to 80kg, which is roughly 1/3 of the original allowance.

The reason being is that the leverage has been increased of the bar where it is attached to the vehicle, therefore the load is magnified three (3) times and as such creates a stress point further down the chassis and the result could be either the mounts on the chassis or body fail. Even worse, the chassis could fail in front of the rear axle.



An extension hitch to a tow bar requires careful consideration to prevent this from happening.

Fitting of the Right Product:

The fitting of the correct product is paramount to alleviating the customers concerns and allowing the vehicle to accomplish the job it was designed to do.

Assessing the vehicle's requirements prior to fitting Pedders Air Assist might realise the fact that it may require springs and shock absorbers as well, so the load can be shared and not to expect the Air Assist system to become the primary load carrier.

If the vehicle has already lost ride height then there is a distinct possibility that the primary system is not up to standard and there is a requirement for the fitment of new, higher rated springs and shock absorbers which will offer better control.

The Pedders Air Assist air bag/bellows system is designed to ASSIST, not to become the primary load carrier.



Coil Spring Air Assist Bags

- Exceptional load assistance characteristics.
- Improved towing and load carrying capability **BUT remember this does not give the ability to increase the GVM of the vehicle.**
- Compensate for general instability associated with heavy loads.
- Increase shock life, improve braking and reduce body roll.
- Full adjustability to allow the Air Assist Bag to be matched to the load.
- Assist spring, shock & bush life.
- Maintain superior comfort levels while providing that extra level of suspension control needed when towing.



Leaf Spring Air Assist Bellows

- Air Assist Bellows fits between the axle housing and the chassis.
- The kit is designed to assist in carrying heavier loads, **BUT remember this does not give the ability to increase the GVM of the vehicle.**
- Improved towing stability.
- Compensate for general instability associated with heavy loads.
- Restrict bottoming out caused by heavy loads or rough terrain.
- Increase shock life, improve braking and reduce body roll.
- Full adjustability to allow the Air Assist Bellows to be matched to the load.
- Assist spring, shock & bush life.
- Maintain comfort levels, while providing that extra level of suspension control.



Pedders Air Assist are just that, an ASSIST, they are NOT fitted to become the PRIMARY load carrying device.

Handy Hints

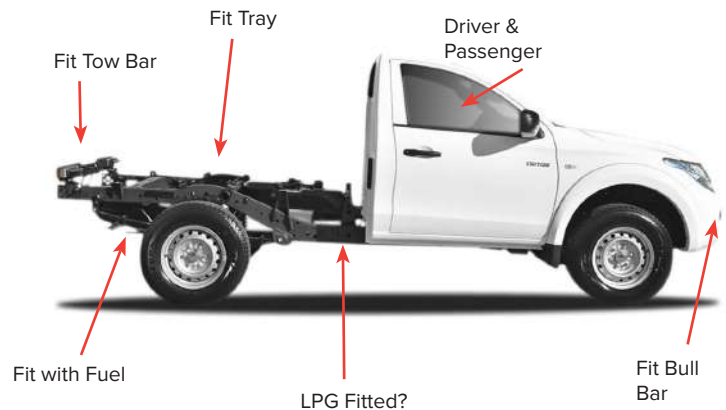
Gross Vehicle Mass verses Pay Load:

Average of cab/chassis utes available on the Australian market;

Kerb Mass = 1505kg Calculated with ¼ of a tank of fuel, No accessories, No passengers or Driver.

The G.V.M. is 2750kg, that allows the vehicle to carry a pay load of 1245kg

2 People	=	170kg
Alloy tray	=	200kg
Fuel	=	75kg
Bull bar	=	30kg
Tow bar	=	20kg
Allowed ball weight	=	180kg
Included weight	=	2180kg
		Balance left = 570kg
If L.P.G. fitted	=	100kg (full)
Included weight	=	2280kg
		Balance left = 470kg



The reason that we have done this calculation, is to better inform you, so you can work closer with your client and offer them informed advice on the best way to proceed with their vehicle. There is a large possibility of the client overloading their vehicle without realising it.

Remember the Brakes!

In many load carrying and or towing situations its also important to consider a brake rotor and or pad upgrade. This will assist in the overall performance of the vehicle under load carrying situations. We will discuss more on brake upgrades in other Pedders Techstops later this year.

Talk to your local Pedders outlet today about your customers load carrying and tow vehicle suspension and brakes solutions. We are here to help you.

