



# WEIGHT MATRIX INTRO

Darren - Pedders Gap  
Store  
0418900851  
Phillip Newland  
ZBD687  
20/03/2024

## Introduction

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Thank you for choosing Pedders for your Tow and Load Assessment. As part of this comprehensive assessment we have entered your load and vehicle weight data into our Weight Matrix (tm) software. This complex software program is designed to provide customers with an accurate but conservative estimate of their vehicle weight and more importantly the impacts of this weight from loads and accessories based on their vehicle.

The Pedders Weight Matrix uses a combination of exact, researched and estimated data to provide customers with an accurate estimate of their vehicle weight, remaining capacity, weight balance and braking distance changes. From information gathered by weighing the vehicle and further information regarding likely weight "scenarios" Pedders experts can provide a tailored solution to ensure improved safety and performance under load. Further explanations are provided below.

## Weight Types

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The Pedders Weight Matrix references 4 critical weights:

**ORIGINAL WEIGHT** is the weight of your exact vehicle (or lightest variant) listed by the original manufacturer when released from new with no load but full of fuel. In some instances, when a manufacturer weight is unknown or not relevant an estimate based on your vehicle will be used.

**SCENARIO WEIGHT** Whether as measured in store, normal driving, towing a caravan, load carrying and so on, the unique scenario that this report refers to is listed at the top of each page. The scenario weight is the actual or estimated weight of this vehicle scenario.

**ESTIMATED LOAD** Is the difference between the "Original Weight" and the "Scenario Weight". If your vehicle has a Gross Vehicle Mass (GVM) limit, legally the estimated load must not exceed this limit.

**PAYLOAD RANGE/CAPACITY** is the difference between the original kerb weight of the vehicle and the maximum real or estimated Gross Vehicle Mass (GVM) or capacity limit of the vehicle. Capacity/Payload used is generally those specified by the vehicle manufacturer but where this weight is unknown or irrelevant an estimated weight may have been used based on our experience of similar vehicles. A Pedders Nationally Certified GVM Upgrade Kit provides additional Payload and where this is available for your vehicle a second set of bars will be shown below for your reference.

## Weight Balance

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Additional to overall weight gain, the shift in weight from original, frontward or rearward, due to the addition of loads or accessories, affects the safety and performance of your vehicle. The Weight Balance Illustration provides you a snapshot of the shift in your vehicle's weight balance relative to each weight scenario compared to original.

## Estimated Additional Braking Distance

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The addition of weight from loads and accessories has a significant effect on braking performance and longevity as well as safety-critical stopping distances. The additional braking distance illustration shows an appropriate additional braking distance based on the addition of weight from original and assuming all other factors remain consistent.



# WEIGHT MATRIX SUMMARY

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## SCENARIO: TRAVELLING

Ford Ranger 2011-2015 PX Extra Cab 4WD Tub Body 3.2lt 5cyl TD

### Vehicle Weight

Following are your vehicle weights;

	FRONT	REAR	TOTAL
ORIGINAL KERB	1198KG	938KG	2136KG
SCENARIO WEIGHT	1413KG	1690KG	3103KG
ESTIMATED LOAD	215KG	752KG	967KG

### Accessories and Loads

The following loads and accessories were noted on the vehicle within this scenario.

**Heavy (50kgs)**  
Bull Bar

**Yes (15kgs)**  
Dual Batteries

**Heavy (40kgs)**  
Winch

**251kgs**  
Cargo Load

**2 People (170kgs)**  
1st Row Occupants

**2 People (110kgs)**  
2nd Row Occupants

**Heavy (40kgs)**  
Tow Bar

**150kgs**  
Tow Ball Load

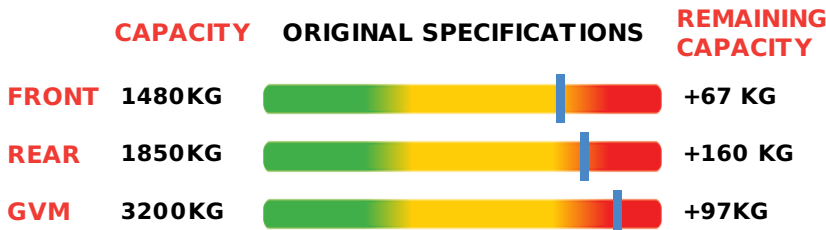
**90 lts (90kgs)**  
Extra Tank Capacity

**Fitted Canopy (50kgs)**  
Canopy/ Hard Top

### Payload Range

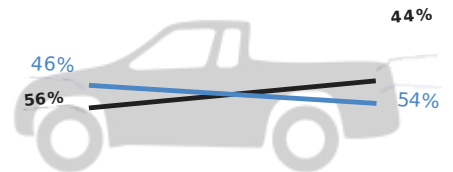
#### VEHICLE PAYLOAD RANGE

Scenario Weight ■



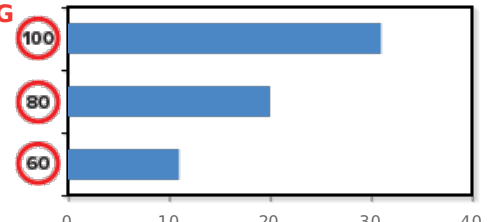
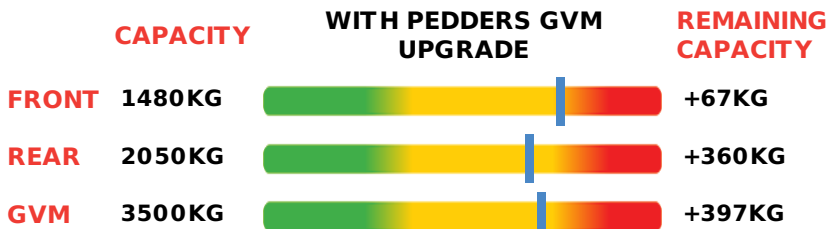
#### WEIGHT BALANCE

Original Kerb Weight —  
 Scenario Weight —



#### Estimated Additional Braking Distance

(compared to original weight)



DISTANCE (METRES)



# TOW & LOAD REPORT

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**SCENARIO: TRAVELLING**

## **Ford Ranger 2011-2015 PX Extra Cab 4WD Tub Body 3.2lt 5cyl TD**

Thank you for choosing Pedders for your Tow and Load Assessment. This report is designed to provide you with a collation of information and recommendations from the two critical stages within this assessment. Please consider this report in conjunction with the information contained within the;

### **1. Pedders Brake, Steering and Suspension Check**

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The priority within the Pedders Tow and Load Assessment is to assess the general condition of your vehicle. A comprehensive Brake, Steering and Suspension Check has been conducted and reported separately. These components are critical to the safety and performance of your vehicle - especially under the extra stress of additional weight from loads and accessories. It is essential that any repairs or replacement listed within this check be undertaken to maximise the effectiveness of any further weight-related upgrades to brakes, steering and suspension.

### **2. Your Vehicle Weight Matrix**

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Your vehicle has been weighed and assessed at its current weight as well as different driving scenarios. These can be matched to original specifications to provide a snapshot of your vehicle weight issues. The 4 critical pieces of information from the Weight Matrix Report (comparing original weight and capacity to the scenario listed above) are;

**ADDITIONAL LOAD ON VEHICLE ABOVE ORIGINAL WEIGHT : 967kgs**

**ALLOWABLE LOAD REMAINING BEFORE ORIGINAL GVM LIMIT IS EXCEEDED : 97kgs**

**ESTIMATED VEHICLE WEIGHT BALANCE SHIFT : 10% REARWARD**

**ESTIMATED ADDITIONAL STOPPING DISTANCE FROM 100KPH : 31metres**

### **Notes**

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# TOW & LOAD REPORT

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## The Effects of Your Weight on Your Vehicle:

The following are the 6 critical effects of weight on a vehicle.

**1. Chassis Dynamics:** The Pitch, Roll and Yaw (The front to back, side to side and rotational motion) of the vehicle body over the wheels and in particular the reaction of these movements to driver input. Increased weight changes the speed and magnitude of these movements and creates a greater disconnect between driver input and vehicle response.

**2. Suspension Travel:** The available upward (compression or bump) and downward (rebound) range of movement within the vehicle's suspension system. Increased weight (typically seen with rear sagging caused by heavy loads) decreases the available compression travel for normal suspension operation thus increasing the frequency and severity of contact with the bump stops. This causes harsh ride characteristics, ineffective suspension control and increased risk of premature wear and tear on steering and suspension components.

**3. Braking Efficiency and Distance:** Increased Total Weight creates a magnification of energy and force onto the vehicles braking system which in turn generates increased heat and stress. Increasing total Weight and/or Inconsistent Vehicle Loading has a significant impact on brake performance, braking longevity and most importantly braking distance.

**4. Tyre Contact and Steering Effectiveness:** Towing and other increased rear end loads cause longitudinal weight transfer which reduces weight over the front axle. The result of this is reduced front tyre contact and grip with the road reducing the responsiveness of steering and braking to driver inputs and more specifically allowing the front of the vehicle to wander or float.

**5. Wheel Alignment:** This is the correct angle of a vehicles tyres to maximise tyre contact under normal driving conditions. Increased Weight causing changes in suspension travel and geometry, which affects the angle of the wheel resulting in the reduction of tyre contact with the road and increased tyre wear. Incorrect Wheel Alignment and Tyre Contact affects all facets of vehicle performance, most importantly safety through diminished steering responsiveness and braking efficiency.

**6. Legal Compliance:** Every vehicle must operate within the weights tolerance specified by the original manufacturers. Failure to adhere to this deems the vehicle unroadworthy.

## Pedders Tow and Load Assessment Solution:

• It is critical to the safety and performance of your tow and load carrying vehicle that items recommended for replacement within Pedders Brake, Steering and Suspension Check be undertaken BEFORE any upgrades.

• Every Load and Every situation is different and that is why Pedders can provide you with a customised load carrying and towing solution that can provide the following benefits;

- Improved Driveability and Chassis Dynamics, especially under load,
- Restore and/or increase ride height and suspension travel under load
- Improve Braking Performance, Longevity and Stopping Distances under load
- Improve Tyre Contact and Steering Effectiveness under load
- Restore correct wheel alignment and reduce tyre wear under load
- Provide greater payload for legal compliance (GVM+ vehicles only)

Pedders speciality is matching it's wide range of brake, steering and suspension product, plus a range of ancillary load and towing solutions to achieve the best outcome no matter what the problem. We call it simply, NO BULL!