

## **PRE INSTALLATION NOTES**

Below are steps required before installation of mast system to vehicle

**READ THIS DOC IN FULL BEFORE CARRYING OUT INSTRUCTIONS**

### **#1 ROOF RACKS**

**You will need to supply and fit 3 Rhino rack cross bar pieces to the Vehicle.**

See vehicle specification documents for type 1 or type 2 vehicles to determine roof racks to use.

**The bars are to be placed on the roof as follows.**

First remove any trim or stripping on the gutter itself.

The Rhino roof bar clamps must clamp to guttering surface that is part of the roof skin  
Not over any trim, nor allowing trim to be sandwiched between the Rhino bar clamp and guttering.

### **REAR CROSS BAR POSITION**

Try to have the rear most cross bar as far as you can to the rear of the vehicle roof or guttering.  
BUT

Don't put the cross bar too far into any rearward gutter incline or slope that will have it on an angle off the level roof line

Distance of the unit from the rear is all that matters, to the front end is just what is left over so move the front roof rack cross bar as far forward without going into the front slope any more than you need to.

We want the rear to front bar distance no less than 2 metres.,  
The more distance from rear to front the better, up to 3 metres

The centre bar is anywhere about half way between the front and rear that it will fit.

The optimal position of each roof rack cross bar on the vehicle roof is having it not over windows or blank panel areas, but best over any upright body pillars on the vehicle, or close as possible to them.

### **3 CROSS BAR LEVELING**

Next is to level off the bars as close as you can.

By using a string line or better a long bit of RHS sitting on the 3 bars, you will then note any gap between the front bar and straight line from the rear bar and centre bar.

Ensure the string line or beam is resting on the rear bar and the centre bar, then measure any remaining gap at the front bar.

Once this is noted, you will need to fit a Rhino spacer to each side of the front bar.

**Rhino provide 2 types, 10mm spacers and 20mm spacers.**

You will need to fit whichever spacers to the front bar that are the same as or smaller than the gap size noted over the front bar.

Round measurement to the nearest 10 mm

For 12 mm, use the 10 mm spacer.

For 18mm, use the 20 mm spacers.

(The 20 mm spacer set is 2 10 mm spacers with a longer bolt provided.)

Most cases the 10mm spacers are adequate.

DO NOT use more than 2 x 10mm Rhino spacers on each side of the front bars.

**Once you have the Rhino spacers fitted to the front bar ends, re check the level using the methods above.**

**And note any remaining gap between the front bar and straight line.**

**Measure that gap again, and then supply that gap measurement to us at RVV as:**

**Front bar gap =**

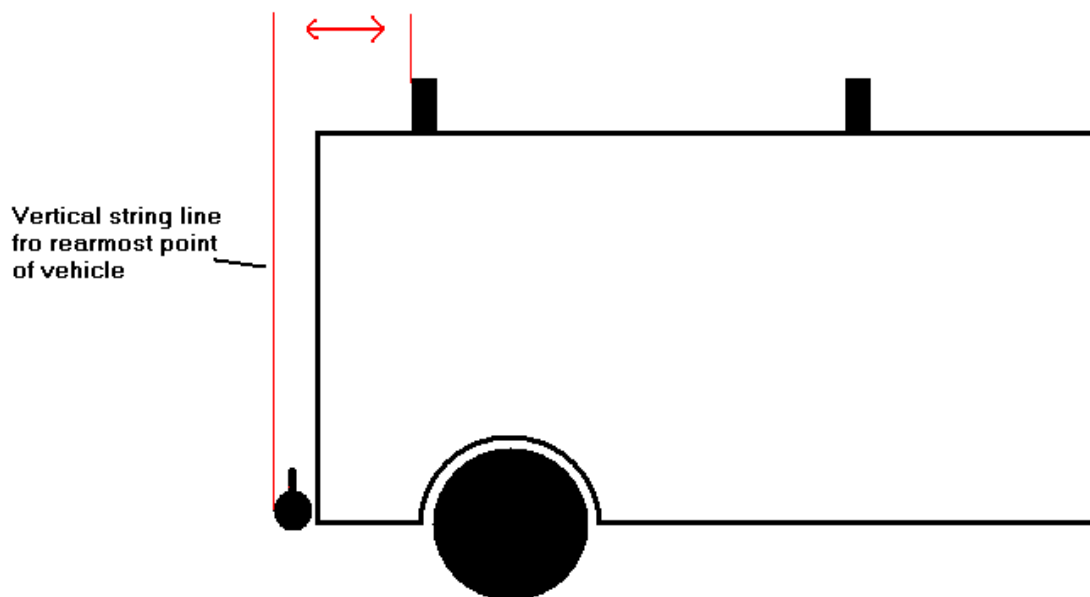
## DISTANCE TO REAR AND SPACING

### Distance to rear =

This is the distance of the rear Rhino cross bar to the rear of the vehicle, taken from a straight vertical line from the lower rear bar position.

This does not include the tow ball extension from the towbar, only to the rear most part of the vehicle itself.

Measure distance from vertical line, to rear face of the rear Rhino cross bar.



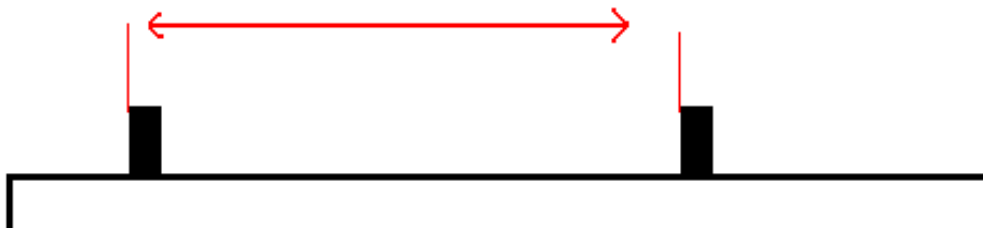
Next measure spacing of the bars from rear to centre and from centre to front.

### Bar spacing is

Rear to Centre =

Centre to Front =

Measuring from the same rear face of each Rhino cross bar to the same on the next



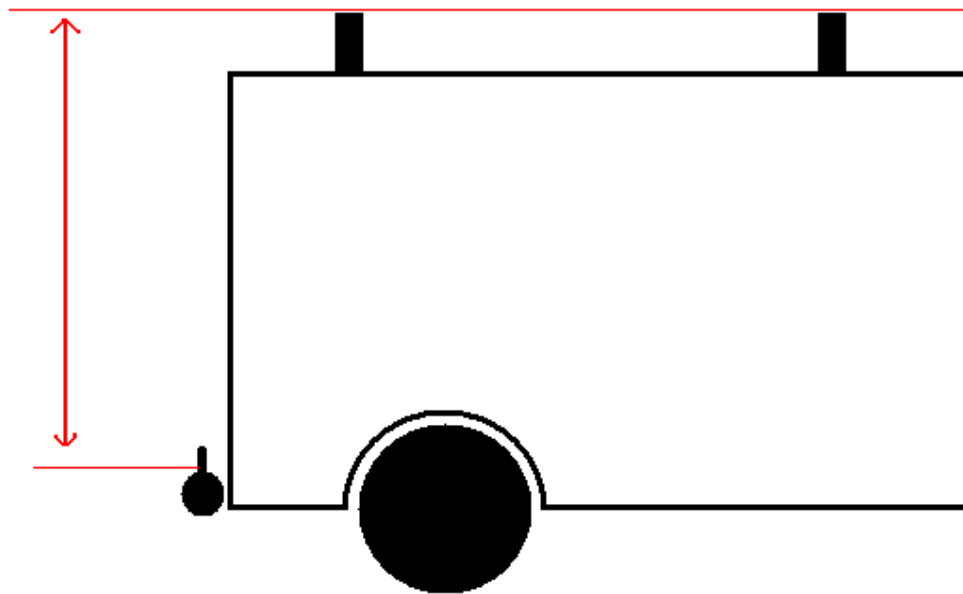
## **SPINE HEIGHT**

### **Spine height =**

This measurement taken simply ensure the distance is within the adjustment range of the foot plate fitted to suit.

**Measurement is taken from top of roof racks to lower rear bar top.**

**Use string line or beam over roof bars to get top line to measure to.**



Provide all the dimensions obtained to us at R.V.V. by e-mail to [contact@rvv.com.au](mailto:contact@rvv.com.au)

We need.

**Front bar gap =** (ONLY IF THERE IS GAP REMAING AFTER FITTING RHINO SPACERS)

**Distance to rear =** (ALL VEHICLES)

**Bar spacing is** (ALL VEHICLES)

**Rear to Centre =**

**Centre to Front =**

**Spine height =** (ALL VEHICLES)

## **MAST BASE SECURING BAR**

This bar fits to the rear of the vehicle to an existing towbar.  
It runs across the rear of the vehicle in line with the towbar cross beam. (usually just under the rear bumper)

Its purpose is to secure the base of the mast to when it positioned vertical.

The mast is secured by 2 link adjustment rods that are secured to pins at each end.

The pins at the mast end are attached to it, the pins at the vehicle end are fitted to this bar we provide.

Due to the variations of towbars vehicles are fitted with, there are a number of types of bars that we make to suit.

They are all similar to each other with minor variations.

We have blank bars made up and simply modify them to suit and then have them zinc passivated for corrosion resistance  
(which takes 2 days usually during final prepping of the unit for delivery).

We will need you to take some images of the towbar in question and provide it to us at R.V.V.  
Side on and rear centre images, also underneath at the rear so we can get a good look at the towbar.

Send them to us at RVV, the images will be marked to show where any measurements need to be taken if any.

Usually 2 to 4 measurements are needed.

We make the bar to suit as far as to completion as possible.

Some bars have additional brackets provided to suit that can be bolted to or welded to the other parts of the bar to suit, then bolted to the towbar.

The bars we provide are zinc passivated, in case any part of the bar is welded to size to enable bolting, or drilled and bolted together, to the zinc passivated parts, use gal / zinc spray to touch up those areas on the bar to avoid corrosion.

No part of the mast base securing bar is to be welded to the vehicle towbar, the bar only bolts to your towbar.

### **REMINDER**

Please send us the above roof bars measurements.

Images of your towbar as above.

Call if you need assistance.

E-mail at [contact@rvv.com.au](mailto:contact@rvv.com.au)

Phone 0425 851 618

(International) +61 425 851 618

David Brimage

Remote Vision Vehicles

[www.rvv.com.au](http://www.rvv.com.au)

Copyright Remote Vision Vehicles 2009

END OF DOC