Calculator Tab

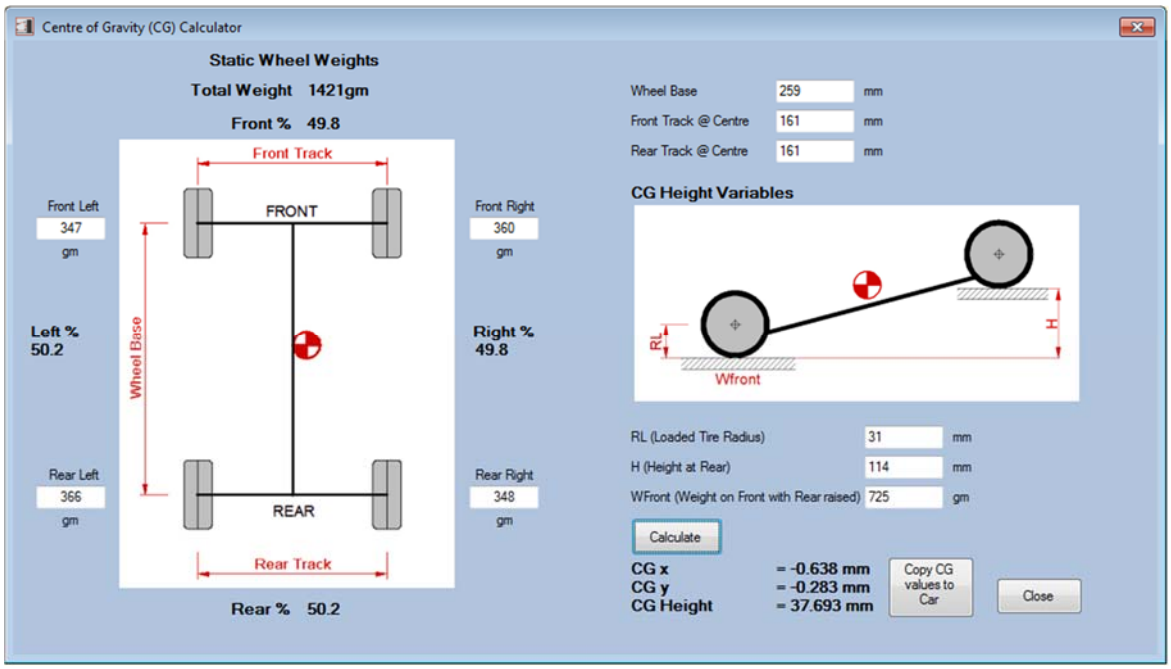
Five different calculators are included. CG, Spring, ARB (Anti-Roll Bar), Gear Ratio and Wire Resistance.

CG Calculator

In order to calculate the suspension properties and complete the Handling simulation the location of the CG is required. The weight on each wheel is required for the calculations, 4 wheel scales is the easiest way to achieve this.

Place the scales on a level surface and enter the wheel weights into the calculator. This will establish the fore/aft, left/right CG position. Note that it is important that the weight is entered into the correct wheel position.

To determine the CG height the rear of the car is raised a known distance. The higher the rear is raised the more accurate the result will be. A height of 4”-5” seems to work well for 1/10 scale sedans. When the rear is raised the car will want to roll off the scales so you need to lock the drivetrain. The easiest way to do this is to insert a piece of paper between the pinion and spur. Remember to remove it when you are done.



Three values are required to calculate the CG height:

RL (loaded Tire Radius) – This is the distance from the centre of the wheel axle to the ground. The default value provided is the half the tire diameter for the

current car. Since the tire will distort slightly the loaded tire radius will be slightly less than this value.

H (height at Rear) – The height the rear is raised above the front.

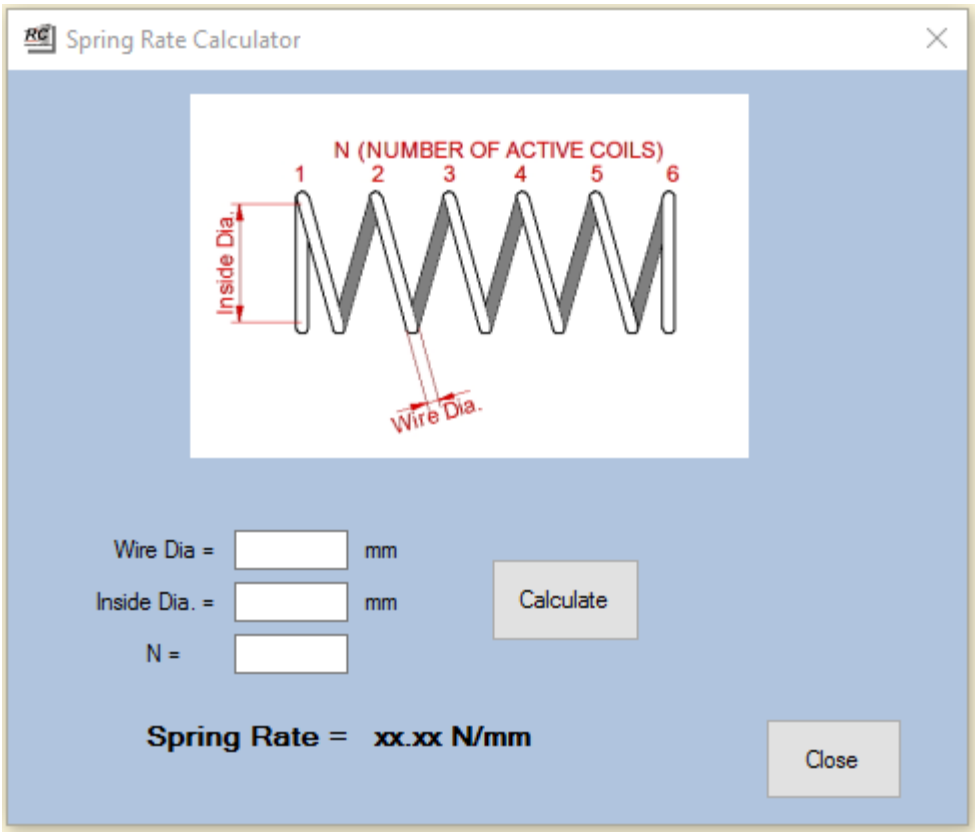
WFront - With the rear raised enter the total weight on the front wheel (sum of left and right wheels).

Click the **Calculate** button.

To update the CG position for the current car click the **Copy CG Values to Car** button.

Spring Rate Calculator

If you don’t know the spring rates for your chassis the spring rate calculator can quickly determine them. Only three values are required to estimate the spring rate. Wire Diameter, Spring inside diameter and the number of active coils.



To determine the **Number of Active Coils** use the following procedure:

- Hold the spring as shown with the start of the spring wire at 12 o'clock.
- Count the total number of coils as shown.
- The last coil must be checked to see if it is a full or partial coil. Normally springs are wound CW so If the end of the spring wire of the last coil aligns with the starting point then the total number of coils equals the count, 6. If the spring wire ends before 12 o'clock the total number of coils would be 5 + the portion of full coil, 5.75 for example. If the end of the wire extends past the 12 o’clock position then the total number of coils would be 6 + the portion of full coil 6.25 for example.
- Normally the first and last coils are ground flat and closed meaning they are considered inactive. In that case the **Number of Active Coils** would be the

total coil count – 2. So if the total coil count is 6.25 the **Number of Active Coils** would be 6.25– 2 = 6.25

It takes practice to determine the number of active coils so using a spring of known rate can be very helpful to compare the results.

ARB Rate Calculator

Calculating the Anti-Roll Bar rate is very straight forward. The model used includes the effects of bending as well as torsion. Just measure and enter the values depicted in the graphic and click calculate.