



Suspension Geometry Formulas

Calculators!

Examples!

Conversions!

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List of 24 Suspension Geometry Formulas

Suspension Geometry 🕑

Anti Geometry of Independent Suspension 🕑



4) Height of Centre of Gravity from Road Surface from Percentage Anti Dive

$$f_{\mathbf{X}} \mathbf{h} = \frac{\left(\% B_{f}\right) \cdot \left(\frac{SVSA_{h}}{SVSA_{l}}\right) \cdot \mathbf{b}_{ind}}{\% AD_{f}}$$

$$e_{\mathbf{X}} 10000 \text{mm} = \frac{\left(60\right) \cdot \left(\frac{200 \text{mm}}{600 \text{mm}}\right) \cdot 1350 \text{mm}}{2.7}$$

$$f_{\mathbf{X}} H_{0} = \frac{10000 \text{mm}}{2.7}$$

5) Height of Centre of Gravity from Road Surface from Percentage Anti Lift

$$fx h = \frac{(\%B_r) \cdot \left(\frac{SVSA_h}{SVSA_l}\right) \cdot b_{ind}}{\%AL_r}$$

$$ex 10000mm = \frac{(60.88889) \cdot \left(\frac{200mm}{600mm}\right) \cdot 1350mm}{2.74}$$

6) Percent Anti Squat 🕑

fx
$$\%$$
AS = $\left(\frac{\tan(\Phi R)}{\frac{h}{b_{ind}}}\right) \cdot 100$
ex $4.498704 = \left(\frac{\tan(18.43^{\circ})}{\frac{10000 \text{mm}}{1350 \text{mm}}}\right) \cdot 100$

Open Calculator 🕑







ex



10) Percentage Rear Braking given Percentage Anti Lift 🕑



ex
$$200 \text{mm} = rac{2.7}{(60) \cdot rac{1000 \text{mm}}{1350 \text{mm}}}$$







14) Side View Swing Arm Length given Percentage Anti Dive 🕑



15) Side View Swing Arm Length given Percentage Anti Lift 🕑



Open Calculator 🕑

Open Calculator





16) Wheelbase of Vehicle from Percentage Anti Dive



17) Wheelbase of Vehicle from Percentage Anti Lift 🖸



Forces on Suspension 🕑

18) Centre of Gravity Position Distance from Front Wheels

fx
$$a = \frac{W_r \cdot b}{m}$$

ex $3570mm = \frac{210kg \cdot 1955mm}{115kg}$



19) Centre of Gravity Position Distance from Rear Wheels 🕑







Open Calculator

23) Motion Ratio given Installation Ratio 🕑

fx
$$M.R. = IR^2$$

ex $0.36 = (0.6)^2$
Open Calculator

24) Wheel Base of Vehicle given COG Position from Rear Axle







Variables Used

- %AD_f Percentage Anti Dive Front
- %AL_r Percentage Anti Lift
- %AS Percentage Anti Squat
- %B_f Percentage Front Braking
- %B_r Percentage Rear Braking
- a Horizontal Distance of C.G. from Front Axle (Millimeter)
- atw Track Width of Vehicle (Millimeter)
- **b** Wheelbase of Vehicle (Millimeter)
- bind Independent Wheelbase of Vehicle (Millimeter)
- C Horizontal Distance of C.G. from Rear Axle (Millimeter)
- Fcoil Force Coil Spring (Newton)
- fvsa Front View Swing Arm (Millimeter)
- h Height of CG above Road (Millimeter)
- IR Installation Ratio
- k Coil Spring Stiffness (Newton per Meter)
- **M** Mass of Vehicle (Kilogram)
- M.R. Motion Ratio in Suspension
- RA Roll Angle (Degree)
- RC Roll Camber
- SVSA_h Side View Swing Arm Height (Millimeter)
- SVSA_I Side View Swing Arm Length (Millimeter)
- W_f Mass on Front Axle (Kilogram)



- W_r Mass on Rear Axle (*Kilogram*)
- X Maximum Compression in Spring (Millimeter)
- **θ** Camber Change Rate (Degree)
- **θc** Camber Angle (Degree)
- **ΦR** Angle between IC and Ground (Degree)

Constants, Functions, Measurements used

- Function: atan, atan(Number) Inverse tan is used to calculate the angle by applying the tangent ratio of the angle, which is the opposite side divided by the adjacent side of the right triangle.
- Function: sqrt, sqrt(Number)
 A square root function is a function that takes a non-negative number as an input and returns the square root of the given input number.
- Function: tan, tan(Angle) The tangent of an angle is a trigonometric ratio of the length of the side opposite an angle to the length of the side adjacent to an angle in a right triangle.
- Measurement: Length in Millimeter (mm) Length Unit Conversion
- Measurement: Weight in Kilogram (kg) Weight Unit Conversion
- Measurement: Force in Newton (N) Force Unit Conversion
- Measurement: Angle in Degree (°) Angle Unit Conversion
- Measurement: Surface Tension in Newton per Meter (N/m) Surface Tension Unit Conversion



Check other formula lists

• Driveline Formulas 🗳

Suspension Geometry
 Formulas

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