

Important Anti Geometry of Independent Suspension Formulas PDF



**Formulas
Examples
with Units**

List of 17 Important Anti Geometry of Independent Suspension Formulas

1) Angle between IC and Ground Formula ↻

Formula

$$\phi_R = \text{atan} \left(\frac{\text{SVSA}_h}{\text{SVSA}_l} \right)$$

Example with Units

$$18.4349^\circ = \text{atan} \left(\frac{200 \text{ mm}}{600 \text{ mm}} \right)$$

Evaluate Formula ↻

2) Camber Change Rate Formula ↻

Formula

$$\theta = \text{atan} \left(\frac{1}{\text{fvsa}} \right)$$

Example with Units

$$36.8974^\circ = \text{atan} \left(\frac{1}{1332 \text{ mm}} \right)$$

Evaluate Formula ↻

3) Front View Swing Arm Formula ↻

Formula

$$\text{fvsa} = \frac{\frac{a_{\text{tw}}}{2}}{1 - \text{RC}}$$

Example with Units

$$1332.6667 \text{ mm} = \frac{1999 \text{ mm}}{1 - 0.25}$$

Evaluate Formula ↻

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

Formula

$$h = \frac{\left(\%B_f \right) \cdot \left(\frac{\text{SVSA}_h}{\text{SVSA}_l} \right) \cdot b}{\%AD_f}$$

Example with Units

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

Evaluate Formula ↻

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

Formula

$$h = \frac{\left(\%B_r \right) \cdot \left(\frac{\text{SVSA}_h}{\text{SVSA}_l} \right) \cdot b}{\%AL_r}$$

Example with Units

$$10000.0002 \text{ mm} = \frac{\left(60.88889 \right) \cdot \left(\frac{200 \text{ mm}}{600 \text{ mm}} \right) \cdot 1350 \text{ mm}}{2.74}$$

Evaluate Formula ↻



6) Percent Anti Squat Formula

Formula

$$\%AS = \left(\frac{\tan(\Phi R)}{\frac{h}{b}} \right) \cdot 100$$

Example with Units

$$4.4987 = \left(\frac{\tan(18.43^\circ)}{\frac{10000 \text{ mm}}{1350 \text{ mm}}} \right) \cdot 100$$

Evaluate Formula 

7) Percentage Anti Dive on Front Formula

Formula

$$\%AD_f = \left(\%B_f \right) \cdot \frac{\frac{SVSA_h}{SVSA_l}}{\frac{h}{b}}$$

Example with Units

$$2.7 = (60) \cdot \frac{\frac{200 \text{ mm}}{600 \text{ mm}}}{\frac{10000 \text{ mm}}{1350 \text{ mm}}}$$

Evaluate Formula 

8) Percentage Anti Lift Formula

Formula

$$\%AL_r = \left(\%B_f \right) \cdot \frac{\frac{SVSA_h}{SVSA_l}}{\frac{h}{b}}$$

Example with Units

$$2.7 = (60) \cdot \frac{\frac{200 \text{ mm}}{600 \text{ mm}}}{\frac{10000 \text{ mm}}{1350 \text{ mm}}}$$

Evaluate Formula 

9) Percentage Front Braking given Percentage Anti Dive Formula

Formula

$$\%B_f = \frac{\%AD_f}{\frac{\frac{SVSA_h}{SVSA_l}}{\frac{h}{b}}}$$

Example with Units

$$60 = \frac{2.7}{\frac{\frac{200 \text{ mm}}{600 \text{ mm}}}{\frac{10000 \text{ mm}}{1350 \text{ mm}}}}$$

Evaluate Formula 

10) Percentage Rear Braking given Percentage Anti Lift Formula

Formula

$$\%B_r = \frac{\%AL_r}{\frac{\frac{SVSA_h}{SVSA_l}}{\frac{h}{b}}}$$

Example with Units

$$60.8889 = \frac{2.74}{\frac{\frac{200 \text{ mm}}{600 \text{ mm}}}{\frac{10000 \text{ mm}}{1350 \text{ mm}}}}$$

Evaluate Formula 

11) Roll Camber Formula

Formula

$$RC = \frac{\theta c}{RA}$$

Example with Units

$$0.25 = \frac{2^\circ}{8^\circ}$$

Evaluate Formula 



12) Side View Swing Arm Height given Percentage Anti Dive Formula ↻

Formula

$$SVSA_h = \frac{\%AD_f}{\left(\%B_f\right) \cdot \frac{\frac{1}{SVSA_1}}{\frac{h}{b}}}$$

Example with Units

$$200\text{mm} = \frac{2.7}{(60) \cdot \frac{\frac{1}{600\text{mm}}}{\frac{10000\text{mm}}{1350\text{mm}}}}$$

Evaluate Formula ↻

13) Side View Swing Arm Height given Percentage Anti Lift Formula ↻

Formula

$$SVSA_h = \frac{\%AL_r}{\left(\%B_r\right) \cdot \frac{\frac{1}{SVSA_1}}{\frac{h}{b}}}$$

Example with Units

$$200\text{mm} = \frac{2.74}{(60.88889) \cdot \frac{\frac{1}{600\text{mm}}}{\frac{10000\text{mm}}{1350\text{mm}}}}$$

Evaluate Formula ↻

14) Side View Swing Arm Length given Percentage Anti Dive Formula ↻

Formula

$$SVSA_l = \frac{\left(\%B_f\right) \cdot \frac{SVSA_h}{\frac{h}{b}}}{\%AD_f}$$

Example with Units

$$600\text{mm} = \frac{(60) \cdot \frac{200\text{mm}}{\frac{10000\text{mm}}{1350\text{mm}}}}{2.7}$$

Evaluate Formula ↻

15) Side View Swing Arm Length given Percentage Anti Lift Formula ↻

Formula

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

Example with Units

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

Evaluate Formula ↻

16) Wheelbase of Vehicle from Percentage Anti Dive Formula ↻

Formula

$$b = \frac{\%AD_f}{\left(\%B_f\right) \cdot \frac{\frac{SVSA_h}{SVSA_1}}{\frac{h}{b}}}$$

Example with Units

$$1350\text{mm} = \frac{2.7}{(60) \cdot \frac{\frac{200\text{mm}}{600\text{mm}}}{\frac{10000\text{mm}}{1350\text{mm}}}}$$

Evaluate Formula ↻

17) Wheelbase of Vehicle from Percentage Anti Lift Formula ↻

Formula

$$b = \frac{\%AL_r}{\left(\%B_r\right) \cdot \frac{\frac{SVSA_h}{SVSA_1}}{\frac{h}{b}}}$$

Example with Units

$$1370\text{mm} = \frac{2.74}{(60) \cdot \frac{\frac{200\text{mm}}{600\text{mm}}}{\frac{10000\text{mm}}{1350\text{mm}}}}$$

Evaluate Formula ↻



Variables used in list of Anti Geometry of Independent Suspension Formulas above

- **%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_{tw}** Track Width of Vehicle (Millimeter)
- **b** Wheelbase of Vehicle (Millimeter)
- **fvsa** Front View Swing Arm (Millimeter)
- **h** Height of CG above Road (Millimeter)
- **RA** Roll Angle (Degree)
- **RC** Roll Camber
- **SVSA_h** Side View Swing Arm Height (Millimeter)
- **SVSA_l** Side View Swing Arm Length (Millimeter)
- **θ** Camber Change Rate (Degree)
- **θ_c** Camber Angle (Degree)
- **Φ_R** Angle between IC and Ground (Degree)

Constants, Functions, Measurements used in list of Anti Geometry of Independent Suspension Formulas above



- **Functions: 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.
- **Functions: 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: Angle** in Degree (°)
Angle Unit Conversion ↻



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