

Important Ride Rate and Ride Frequency for Race Cars Formulas PDF



Formulas Examples with Units

List of 12 Important Ride Rate and Ride Frequency for Race Cars Formulas

1) Front Bump Allowance given Front Ride Rate Formula ↻

Formula

$$x_1 = \frac{\Delta W_{fo} \cdot [g]}{K_{rf}}$$

Example with Units

$$0.07 \text{ m} = \frac{226 \text{ kg} \cdot 9.8066 \text{ m/s}^2}{31661 \text{ N/m}}$$

Evaluate Formula ↻

2) Front Outside Wheel Load Change given Front Ride Rate Formula ↻

Formula

$$\Delta W_{fo} = \frac{x_1 \cdot K_{rf}}{[g]}$$

Example with Units

$$225.9966 \text{ kg} = \frac{0.070 \text{ m} \cdot 31661 \text{ N/m}}{9.8066 \text{ m/s}^2}$$

Evaluate Formula ↻

3) Front Ride Frequency Formula ↻

Formula

$$\omega_f = \frac{0.5}{\pi} \cdot \sqrt{\frac{K_{rf}}{W}}$$

Example with Units

$$1.3204 \text{ Hz} = \frac{0.5}{3.1416} \cdot \sqrt{\frac{31661 \text{ N/m}}{460 \text{ kg}}}$$

Evaluate Formula ↻

4) Front Ride Rate Formula ↻

Formula

$$K_{rf} = \frac{\Delta W_{fo} \cdot [g]}{x_1}$$

Example with Units

$$31661.47 \text{ N/m} = \frac{226 \text{ kg} \cdot 9.8066 \text{ m/s}^2}{0.070 \text{ m}}$$

Evaluate Formula ↻

5) Front Ride Rate given Front Ride Frequency Formula ↻

Formula

$$K_{rf} = (\omega_f \cdot 2 \cdot \pi)^2 \cdot W$$

Example with Units

$$32123.3515 \text{ N/m} = (1.33 \text{ Hz} \cdot 2 \cdot 3.1416)^2 \cdot 460 \text{ kg}$$

Evaluate Formula ↻

6) Load on Front Wheel given Front Ride Frequency Formula ↻

Formula

$$W = \frac{K_{rf}}{(\omega_f \cdot 2 \cdot \pi)^2}$$

Example with Units

$$453.3792 \text{ kg} = \frac{31661 \text{ N/m}}{(1.33 \text{ Hz} \cdot 2 \cdot 3.1416)^2}$$

Evaluate Formula ↻



7) Load on Rear Wheel given Rear Ride Frequency Formula

Formula

$$W = \frac{K_r}{(\omega_f \cdot 2 \cdot \pi)^2}$$

Example with Units

$$454.625 \text{ kg} = \frac{31748 \text{ N/m}}{(1.33 \text{ Hz} \cdot 2 \cdot 3.1416)^2}$$

Evaluate Formula 

8) Rear Bump Allowance given Rear Ride Rate Formula

Formula

$$x_2 = \frac{\Delta W_{ro} \cdot [g]}{K_r}$$

Example with Units

$$0.05 \text{ m} = \frac{161.87 \text{ kg} \cdot 9.8066 \text{ m/s}^2}{31748 \text{ N/m}}$$

Evaluate Formula 

9) Rear Outside Wheel Load Change given Rear Ride Rate Formula

Formula

$$\Delta W_{ro} = \frac{x_2 \cdot K_r}{[g]}$$

Example with Units

$$161.8698 \text{ kg} = \frac{0.05 \text{ m} \cdot 31748 \text{ N/m}}{9.8066 \text{ m/s}^2}$$

Evaluate Formula 

10) Rear Ride Frequency Formula

Formula

$$\omega_f = \frac{0.5}{\pi} \cdot \sqrt{\frac{K_r}{W}}$$

Example with Units

$$1.3222 \text{ Hz} = \frac{0.5}{3.1416} \cdot \sqrt{\frac{31748 \text{ N/m}}{460 \text{ kg}}}$$

Evaluate Formula 

11) Rear Ride Rate Formula

Formula

$$K_r = \frac{\Delta W_{ro} \cdot [g]}{x_2}$$

Example with Units

$$31748.0487 \text{ N/m} = \frac{161.87 \text{ kg} \cdot 9.8066 \text{ m/s}^2}{0.05 \text{ m}}$$

Evaluate Formula 

12) Rear Ride Rate given Rear Ride Frequency Formula

Formula

$$K_r = (\omega_f \cdot 2 \cdot \pi)^2 \cdot W$$

Example with Units

$$32123.3515 \text{ N/m} = (1.33 \text{ Hz} \cdot 2 \cdot 3.1416)^2 \cdot 460 \text{ kg}$$

Evaluate Formula 



Variables used in list of Ride Rate and Ride Frequency for Race Cars Formulas above

- **K_r** Rear Ride Rate (Newton per Meter)
- **K_{rf}** Front Ride Rate (Newton per Meter)
- **W** Load on Individual Wheel in Static Condition (Kilogram)
- **x_1** Front Bump Allowance (Meter)
- **x_2** Rear Bump Allowance (Meter)
- **ΔW_{fo}** Front Outside Wheel Change (Kilogram)
- **ΔW_{ro}** Rear Outside Wheel Change (Kilogram)
- **ω_f** Ride Frequency (Hertz)

Constants, Functions, Measurements used in list of Ride Rate and Ride Frequency for Race Cars Formulas above

- **constant(s):** π , 3.14159265358979323846264338327950288
Archimedes' constant
- **constant(s):** $[g]$, 9.80665
Gravitational acceleration on Earth
- **Functions:** **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.
- **Measurement: Length** in Meter (m)
Length Unit Conversion 
- **Measurement: Weight** in Kilogram (kg)
Weight Unit Conversion 
- **Measurement: Frequency** in Hertz (Hz)
Frequency Unit Conversion 
- **Measurement: Surface Tension** in Newton per Meter (N/m)
Surface Tension Unit Conversion 



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