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Ride Rate and Ride Frequency for Race Cars Formulas

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

Ride Rate and Ride Frequency for Race Cars

1) Front Bump Allowance given Front Ride Rate

Open Calculator

fx $$x_1 = \frac{\Delta W_{FO} \cdot [g]}{K_{RF}}$$

ex $$0.070001\text{m} = \frac{226\text{kg} \cdot [g]}{31661\text{N/m}}$$

2) Front Outside Wheel Load Change given Front Ride Rate

Open Calculator

fx $$\Delta W_{FO} = \frac{x_1 \cdot K_{RF}}{[g]}$$

ex $$225.9966\text{kg} = \frac{0.070\text{m} \cdot 31661\text{N/m}}{[g]}$$

3) Front Ride Frequency

Open Calculator

fx $$\omega_F = \frac{0.5}{\pi} \cdot \sqrt{\frac{K_{RF}}{W}}$$

ex $$1.320394\text{Hz} = \frac{0.5}{\pi} \cdot \sqrt{\frac{31661\text{N/m}}{460\text{kg}}}$$

4) Front Ride Rate

Open Calculator

fx $$K_{RF} = \frac{\Delta W_{FO} \cdot [g]}{x_1}$$

ex $$31661.47\text{N/m} = \frac{226\text{kg} \cdot [g]}{0.070\text{m}}$$

5) Front Ride Rate given Front Ride Frequency

Open Calculator

fx $$K_{RF} = (\omega_F \cdot 2 \cdot \pi)^2 \cdot W$$

ex $$32123.35\text{N/m} = (1.33\text{Hz} \cdot 2 \cdot \pi)^2 \cdot 460\text{kg}$$

6) Load on Front Wheel given Front Ride Frequency

Open Calculator

fx $$W = \frac{K_{RF}}{(\omega_F \cdot 2 \cdot \pi)^2}$$

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

7) Load on Rear Wheel given Rear Ride Frequency

Open Calculator

fx $$W = \frac{K_{RR}}{(\omega_F \cdot 2 \cdot \pi)^2}$$

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

8) Rear Bump Allowance given Rear Ride Rate

Open Calculator

fx $$x_2 = \frac{\Delta W_{RO} \cdot [g]}{K_{RR}}$$

ex $$0.05\text{m} = \frac{161.87\text{kg} \cdot [g]}{31748\text{N/m}}$$

9) Rear Outside Wheel Load Change given Rear Ride Rate

Open Calculator

fx $$\Delta W_{RO} = \frac{x_2 \cdot K_{RR}}{[g]}$$

ex $$161.8698\text{kg} = \frac{0.05\text{m} \cdot 31748\text{N/m}}{[g]}$$

10) Rear Ride Frequency

Open Calculator

fx $$\omega_F = \frac{0.5}{\pi} \cdot \sqrt{\frac{K_{RR}}{W}}$$

ex $$1.322207\text{Hz} = \frac{0.5}{\pi} \cdot \sqrt{\frac{31748\text{N/m}}{460\text{kg}}}$$

11) Rear Ride Rate

Open Calculator

fx $$K_{RR} = \frac{\Delta W_{RO} \cdot [g]}{x_2}$$

ex $$31748.05\text{N/m} = \frac{161.87\text{kg} \cdot [g]}{0.05\text{m}}$$

12) Rear Ride Rate given Rear Ride Frequency

Open Calculator

fx $$K_{RR} = (\omega_F \cdot 2 \cdot \pi)^2 \cdot W$$

ex $$32123.35\text{N/m} = (1.33\text{Hz} \cdot 2 \cdot \pi)^2 \cdot 460\text{kg}$$

Variables Used

- K_{RF} Front Ride Rate *(Newton per Meter)*
- K_{RR} Rear 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

- Constant: **pi**, 3.14159265358979323846264338327950288
  Archimedes' constant
- Constant: **[g]**, 9.80665 Meter/Second²
  Gravitational acceleration on Earth
- Function: **sqrt**, sqrt(Number)
  Square root function
- 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

Check other formula lists

- **Rates for Axle Suspension in Race Car Formulas**
- **Ride Rate and Ride Frequency for Race Cars Formulas**
- **Vehicle Cornering in Race Cars Formulas**
- **Weight Transfer during Braking Formulas**
- **Wheel Centre Rates for Independent Suspension Formulas**

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