Important Braking Torque Formulas PDF





7) Braking Torque for Shoe Brake if Line of Action of Tangential Force Passes above Fulcrum Anti Clock Formula 🕝

Formula	Example with Units
$\mu_b \cdot r_w \cdot P \cdot l$	0.35 · 1.89 m · 16 N · 1.1 m
$M_t = \frac{1}{x + \mu_b \cdot a_s}$	$5m + 0.35 \cdot 3.5m$

8) Braking Torque of Shoe Brake if Line of Action of Tangential Force Passes above Fulcrum Clockwise Formula

Formula	Example with Units
$\mu_b \cdot r_w \cdot P \cdot l$	$3.0841_{\text{N*m}} = \frac{0.35 \cdot 1.89_{\text{m}} \cdot 16_{\text{N}} \cdot 1.1_{\text{m}}}{0.35 \cdot 1.89_{\text{m}} \cdot 16_{\text{N}} \cdot 1.1_{\text{m}}}$
$M_t = \frac{1}{x - \mu_b \cdot a_s}$	5m - 0.35 · 3.5m

9) Braking Torque of Shoe Brake if Line of Action of Tangential Force Passes below Fulcrum Anti Clock Formula

Formula	Example with Units
$\mu_b \cdot r_w \cdot P \cdot l$	$3.0841_{\text{N*m}} = \frac{0.35 \cdot 1.89_{\text{m}} \cdot 16_{\text{N}} \cdot 1.1_{\text{m}}}{0.35 \cdot 1.89_{\text{m}} \cdot 16_{\text{N}} \cdot 1.1_{\text{m}}}$
$M_t = \frac{1}{x - \mu_b \cdot a_s}$	5.0041 m $=$ 5 m $- 0.35 \cdot 3.5$ m

10) Braking Torque of Shoe Brake if Line of Action of Tangential Force Passes below Fulcrum Clockwise Formula

Formula	Example with Units
$M_t = \frac{\mu_b \cdot r_w \cdot P \cdot l}{x + \mu_b \cdot a_s}$	$1.8703_{N^*m} = \frac{0.35 \cdot 1.89_{m} \cdot 16_{N} \cdot 1.1_{m}}{5_{m} + 0.35 \cdot 3.5_{m}}$

11) Braking Torque on Drum for Simple Band Brake Considering Band Thickness Formula 🕝

FormulaExample with Units $M_t = (T_1 - T_2) \cdot r_e$ $33 N^*m = (720 N - 500 N) \cdot 0.15 m$

12) Braking Torque on Drum for Simple Band Brake, Neglecting Thickness of Band Formula





Evaluate Formula 🦳

Evaluate Formula

Evaluate Formula 🦳

Evaluate Formula

Evaluate Formula

Variables used in list of Braking Torque Formulas above

- µ Equivalent Coefficient of Friction
- **a**_s Shift in Line of Action of Tangential Force (*Meter*)
- Ft Tangential Braking Force (Newton)
- Ft1 Braking Forces on The Block 1 (Newton)
- Ft2 Braking Forces on The Block 2 (Newton)
- I Distance Between Fulcrum And End of Lever (Meter)
- M_t Braking or Fixing Torque on Fixed Member (Newton Meter)
- **P** Force Applied at The End of The Lever (*Newton*)
- rd Radius of The Drum (Meter)
- re Effective Radius of The Drum (Meter)
- R_n Normal Force Pressing The Brake Block on The Wheel (Newton)
- rw Radius of Wheel (Meter)
- T₁ Tension in Tight Side of The Band (Newton)
- T₂ Tension in The Slack Side of Band (Newton)
- X Distance Between Fulcrum And Axis of Wheel (*Meter*)
- µb Coefficient of Friction For Brake

Constants, Functions, Measurements used in list of Braking Torque Formulas above

- Measurement: Length in Meter (m) Length Unit Conversion
- Measurement: Force in Newton (N)
 Force Unit Conversion
- Measurement: Torque in Newton Meter (N*m) Torque Unit Conversion

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