



Lug or Bracket Support Formulas

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Examples!

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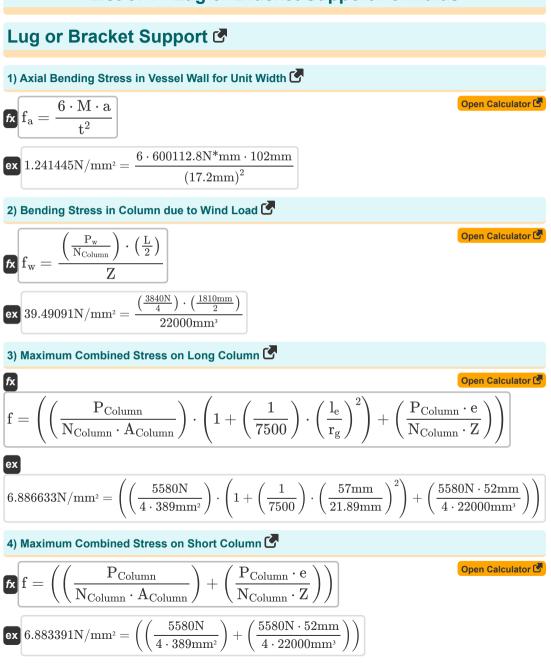
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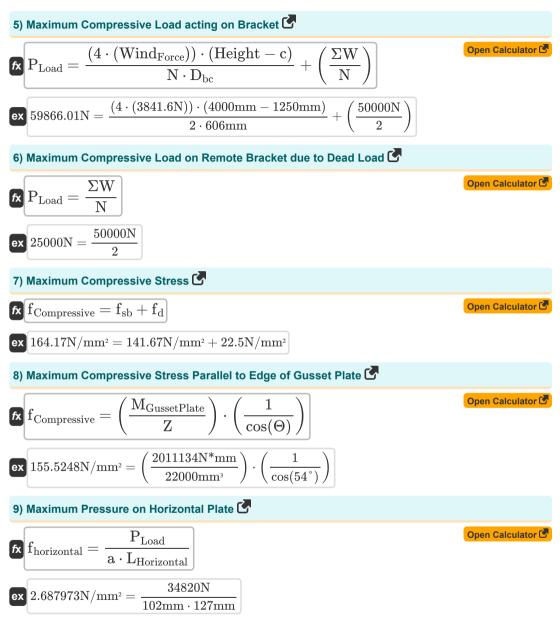


List of 14 Lug or Bracket Support Formulas











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Open Calculator

Open Calculator



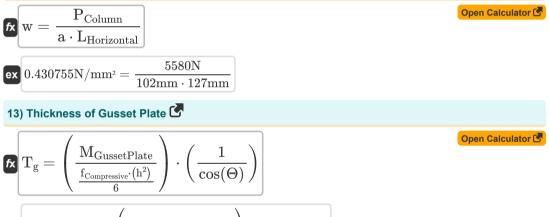
fx
$$A_p = \frac{P_{Column}}{f_c}$$

ex
$$1468.421 \text{mm}^2 = \frac{5580 \text{N}}{3.8 \text{N/mm}^2}$$

11) Minimum Thickness of Base Plate 🖸

$$\mathbf{fx} \mathbf{t}_{\mathrm{B}} = \left(\left(3 \cdot \frac{\mathrm{w}}{\mathrm{f}_{\mathrm{b}}} \right) \cdot \left((\mathrm{A})^{2} - \left(\frac{(\mathrm{B})^{2}}{4} \right) \right) \right)^{0.5}$$

$$\mathbf{ex} 1.955142 \mathrm{mm} = \left(\left(3 \cdot \frac{0.4 \mathrm{N/mm^{2}}}{155 \mathrm{N/mm^{2}}} \right) \cdot \left((26 \mathrm{mm})^{2} - \left(\frac{(27 \mathrm{mm})^{2}}{4} \right) \right) \right)^{0.5}$$



$$\mathbf{X} 3.532161 \mathrm{mm} = \left(\frac{2011134 \mathrm{N*mm}}{\frac{161 \mathrm{N/mm^2} \cdot \left((190 \mathrm{mm})^2\right)}{6}}\right) \cdot \left(\frac{1}{\cos(54^\circ)}\right)$$







14) Thickness of Horizontal Plate Fixed at Edges 🕑

$$\begin{aligned} & \underbrace{\mathsf{C}} & \underbrace{\mathsf{Open Calculator C}} \\ & \mathbf{T}_{h} = \left((0.7) \cdot \left(\mathbf{f}_{horizontal} \right) \cdot \left(\frac{\left(\mathbf{L}_{Horizontal} \right)^{2}}{\mathbf{f}_{Edges}} \right) \cdot \left(\frac{\left(\mathbf{a} \right)^{4}}{\left(\mathbf{L}_{Horizontal} \right)^{4} + \left(\mathbf{a} \right)^{4}} \right) \right)^{0.5} \end{aligned}$$

$$\underbrace{\mathsf{ex}} 3.710854 \mathrm{mm} = \left((0.7) \cdot (2.2 \mathrm{N/mm^{2}}) \cdot \left(\frac{(127 \mathrm{mm})^{2}}{530 \mathrm{N/mm^{2}}} \right) \cdot \left(\frac{(102 \mathrm{mm})^{4}}{(127 \mathrm{mm})^{4} + (102 \mathrm{mm})^{4}} \right) \right)^{0.5} \end{aligned}$$



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Variables Used

- a Effective Width of Horizontal Plate (Millimeter)
- A Greater Projection of Plate beyond Column (Millimeter)
- Acolumn Cross Sectional Area of Column (Square Millimeter)
- Ap Minimum Area provided by Base Plate (Square Millimeter)
- B Lesser Projection of Plate beyond Column (Millimeter)
- C Clearance between Vessel Bottom and Foundation (Millimeter)
- Dbc Diameter of Anchor Bolt Circle (Millimeter)
- e Eccentricity for Vessel Support (Millimeter)
- f Maximum Combined Stress (Newton per Square Millimeter)
- fa Axial Bending Stress induced in Vessel Wall (Newton per Square Millimeter)
- fb Permissible Bending Stress in Base Plate Material (Newton per Square Millimeter)
- fc Permissible Bearing Strength of Concrete (Newton per Square Millimeter)
- fCompressive Maximum Compressive Stress (Newton per Square Millimeter)
- **f**d Compressive Stress due to Force (Newton per Square Millimeter)
- fEdges Maximum Stress in Horizontal Plate fixed at Edges (Newton per Square Millimeter)
- fhorizontal Maximum Pressure on Horizontal Plate (Newton per Square Millimeter)
- fsb Stress due to Bending Moment (Newton per Square Millimeter)
- fw Bending Stress in Column due to Wind Load (Newton per Square Millimeter)
- **h** Height of Gusset Plate (Millimeter)
- Height Height of Vessel above Foundation (Millimeter)
- L Length of Columns (Millimeter)
- Ie Column Effective Length (Millimeter)
- Length of Horizontal Plate (Millimeter)
- M Axial Bending Moment (Newton Millimeter)
- MGussetPlate Bending Moment of Gusset Plate (Newton Millimeter)
- N Number of Brackets
- N_{Column} Number of Columns
- PColumn Axial Compressive Load on Column (Newton)
- PLoad Maximum Compressive Load on Remote Bracket (Newton)
- Pw Wind Load acting on Vessel (Newton)



- ra Radius of Gyration of Column (Millimeter)
- t Vessel Shell Thickness (Millimeter)
- **t**_B Minimum Thickness of Base Plate (*Millimeter*)
- T_q Thickness of Gusset Plate (Millimeter)
- Th Thickness of Horizontal Plate (Millimeter)
- W Pressure Intensity on Under Side of Base Plate (Newton per Square Millimeter)
- Wind_{Force} Total Wind Force acting on Vessel (Newton)
- Z Section Modulus of Vessel Support (Cubic Millimeter)
- O Gusset Plate Edge Angle (Degree)
- ΣW Total Weight of Vessel (Newton)





Constants, Functions, Measurements used

- Function: **cos**, cos(Angle) *Trigonometric cosine function*
- Measurement: Length in Millimeter (mm) Length Unit Conversion
- Measurement: Volume in Cubic Millimeter (mm³) Volume Unit Conversion
- Measurement: Area in Square Millimeter (mm²) Area Unit Conversion
- Measurement: Pressure in Newton per Square Millimeter (N/mm²) Pressure Unit Conversion
- Measurement: Force in Newton (N) Force Unit Conversion
- Measurement: Angle in Degree (°) Angle Unit Conversion
- Measurement: Bending Moment in Newton Millimeter (N*mm) Bending Moment Unit Conversion
- Measurement: Stress in Newton per Square Millimeter (N/mm²) Stress Unit Conversion



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