



Elastic Packing Formulas

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List of 9 Elastic Packing Formulas

Elastic Packing

1) Diameter of Bolt given Frictional Force exerted by Soft packing on Reciprocating rod

fx
$$d = rac{F_{\mathrm{friction}}}{.005 \cdot \mathrm{p}}$$

Open Calculator

$$= \frac{294N}{.005 \cdot 4.24MPa}$$

2) Fluid pressure by soft packing exerted by frictional force on reciprocating rod

$$\mathbf{f} \mathbf{x} = rac{\mathrm{F}_{\mathrm{friction}}}{.005 \cdot \mathrm{d}}$$

Open Calculator 🗗

ex
$$4.2 \text{MPa} = \frac{294 \text{N}}{.005 \cdot 14 \text{mm}}$$

3) Fluid Pressure given Friction Resistance

$$\mathbf{p} = rac{\mathrm{F}_{\mathrm{friction}} - \mathrm{F}_{\mathrm{0}}}{\mu \cdot \mathrm{A}}$$

Open Calculator 🗗

$$=$$
 $4.20202 ext{MPa} = rac{294 ext{N} - 190 ext{N}}{0.3 \cdot 82.5 ext{mm}^2}$





4) Fluid Pressure given Torsional Resistance 🗗

 $\mathbf{p} = rac{\mathrm{M_t \cdot 2}}{.005 \cdot \mathrm{(d)}^2}$

Open Calculator

 $= \frac{2.06 \text{N} \cdot 2}{1.005 \cdot (14 \text{mm})^2}$

5) Friction resistance

fx $F_{
m friction} = F_0 + (\mu \cdot A \cdot p)$

Open Calculator 2

 $294.94N = 190N + (0.3 \cdot 82.5mm^2 \cdot 4.24MPa)$

- 6) Frictional force exerted by soft packing on reciprocating rod
- $F_{friction} = .005 \cdot p \cdot d$

Open Calculator

 $[296.8N = .005 \cdot 4.24MPa \cdot 14mm]$

7) Seal resistance

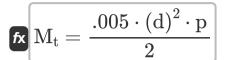
fx $F_0 = F_{\mathrm{friction}} - (\mu \cdot A \cdot p)$

Open Calculator 🚰

ex $189.06N = 294N - (0.3 \cdot 82.5mm^2 \cdot 4.24MPa)$



8) Torsional Resistance given Fluid Pressure



Open Calculator

$$\mathbf{ex} = \frac{.005 \cdot (14 \mathrm{mm})^2 \cdot 4.24 \mathrm{MPa}}{2}$$

9) Torsional resistance in rotary motion friction



Open Calculator

$$\boxed{2.058\mathrm{N} = \frac{294\mathrm{N} \cdot 14\mathrm{mm}}{2}}$$



Variables Used

- A Area of seal contacting sliding member (Square Millimeter)
- **d** Diameter of elastic packing bolt (Millimeter)
- **F**₀ Seal Resistance (Newton)
- **F**_{friction} Friction Force in elastic packing (Newton)
- M_t Torsional Resistance in Elastic Packing (Newton)
- p Fluid Pressure in elastic packing (Megapascal)
- µ Coefficient of Friction in elastic packing





Constants, Functions, Measurements used

- Measurement: Length in Millimeter (mm)
 Length Unit Conversion
- Measurement: Area in Square Millimeter (mm²)
 Area Unit Conversion
- Measurement: Pressure in Megapascal (MPa)
 Pressure Unit Conversion
- Measurement: Force in Newton (N)

 Force Unit Conversion





Check other formula lists

- Bolt Loads in Gasket Joints Formulas C
- Elastic Packing Formulas



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