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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

Open Calculator

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

ex $$13.86792\text{mm} = \frac{294\text{N}}{.005 \cdot 4.24\text{MPa}}$$

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

Open Calculator

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

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

3) Fluid Pressure given Friction Resistance

Open Calculator

fx $$p = \frac{F_{friction} - F_0}{\mu \cdot A}$$

ex $$4.20202\text{MPa} = \frac{294\text{N} - 190\text{N}}{0.3 \cdot 82.5\text{mm}^2}$$

4) Fluid Pressure given Torsional Resistance

Open Calculator

fx $$p = \frac{M_t \cdot 2}{.005 \cdot (d)^2}$$

ex $$4.204082\text{MPa} = \frac{2.06\text{N} \cdot 2}{.005 \cdot (14\text{mm})^2}$$

5) Friction resistance

Open Calculator

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

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

6) Frictional force exerted by soft packing on reciprocating rod

Open Calculator

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

ex $$296.8\text{N} = .005 \cdot 4.24\text{MPa} \cdot 14\text{mm}$$

7) Seal resistance

Open Calculator

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

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

8) Torsional Resistance given Fluid Pressure

Open Calculator

$$M_t = \frac{.005 \cdot (d)^2 \cdot p}{2}$$

$$2.0776\text{N} = \frac{.005 \cdot (14\text{mm})^2 \cdot 4.24\text{MPa}}{2}$$

9) Torsional resistance in rotary motion friction

Open Calculator

$$M_t = \frac{F_{friction} \cdot d}{2}$$

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

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**
- **Elastic Packing Formulas**
- **V Ring Packing Formulas**

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