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# Bolted Joints Formulas

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# List of 10 Bolted Joints Formulas

## Bolted Joints

### 1) Axial Length of Sleeve of Muff Coupling

$$fx \quad L = 2 \cdot d + 0.013$$

[Open Calculator !\[\]\(a870788d6ed9b8fd294b7654a8c8526b\_img.jpg\)](#)

$$ex \quad 67\text{mm} = 2 \cdot 27\text{mm} + 0.013$$

### 2) Diameter of Driving Shaft of Clamp Coupling given Length of Sleeve

$$fx \quad d = \frac{L_s}{3.5}$$

[Open Calculator !\[\]\(c50c8b7b2cc2cf9ff925edec0ee94c0d\_img.jpg\)](#)

$$ex \quad 27\text{mm} = \frac{94.5\text{mm}}{3.5}$$

### 3) Diameter of Driving Shaft of Clamp Coupling given Outer diameter of Sleeve Halves

$$fx \quad d = \frac{D_s}{2.5}$$

[Open Calculator !\[\]\(f60b7a900783ac3fd531bfd9c111be6d\_img.jpg\)](#)

$$ex \quad 27\text{mm} = \frac{67.5\text{mm}}{2.5}$$



#### 4) Diameter of Driving Shaft of Muff Coupling given Axial Length of Sleeve



$$fx \quad d = \frac{L - 0.013}{2}$$

[Open Calculator](#)

$$ex \quad 27\text{mm} = \frac{67\text{mm} - 0.013}{2}$$

#### 5) Diameter of Driving Shaft of Muff Coupling given Outer Diameter of Sleeve



$$fx \quad d = \frac{D_s - 0.013}{2}$$

[Open Calculator](#)

$$ex \quad 27.25\text{mm} = \frac{67.5\text{mm} - 0.013}{2}$$

#### 6) Length of Sleeve Halves of Clamp Coupling



$$fx \quad L_s = 3.5 \cdot d$$

[Open Calculator](#)

$$ex \quad 94.5\text{mm} = 3.5 \cdot 27\text{mm}$$

#### 7) Outer Diameter of Sleeve Halves of Clamp Coupling



$$fx \quad D_s = 2.5 \cdot d$$

[Open Calculator](#)

$$ex \quad 67.5\text{mm} = 2.5 \cdot 27\text{mm}$$



## 8) Outer Diameter of Sleeve of Muff Coupling

$$fx \quad D_s = 2 \cdot d + 0.013$$

[Open Calculator !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95\_img.jpg\)](#)

$$ex \quad 67\text{mm} = 2 \cdot 27\text{mm} + 0.013$$

## 9) Tensile Force on Each Bolt of Clamp Coupling

$$fx \quad P_t = \frac{2 \cdot N_c}{n}$$

[Open Calculator !\[\]\(05be7c7a8995decd503647c99211f7c2\_img.jpg\)](#)

$$ex \quad 12000\text{N} = \frac{2 \cdot 48000\text{N}}{8}$$

## 10) Tensile Force on Each Bolt of Clamp Coupling given Torque

$$fx \quad P_t = \frac{2 \cdot M_t}{\mu \cdot d \cdot n}$$

[Open Calculator !\[\]\(fe3aebe81acea8d45108cd2768939da7\_img.jpg\)](#)

$$ex \quad 12000.12\text{N} = \frac{2 \cdot 397500\text{N} \cdot \text{mm}}{0.30671 \cdot 27\text{mm} \cdot 8}$$






## Variables Used

- **d** Diameter of Driving Shaft For Coupling (*Millimeter*)
- **D<sub>s</sub>** Outer Diameter of Sleeve of Coupling (*Millimeter*)
- **L** Axial Length of Sleeve of Muff Coupling (*Millimeter*)
- **L<sub>s</sub>** Length of Sleeve Halves of Coupling (*Millimeter*)
- **M<sub>t</sub>** Torque Transmitted By Coupling (*Newton Millimeter*)
- **n** Number of Bolts in Clamp Coupling
- **N<sub>c</sub>** Clamping Force on Shaft For Clamp Coupling (*Newton*)
- **P<sub>t</sub>** Tensile Force on Clamp Coupling Bolt (*Newton*)
- **μ** Coefficient of Friction For Clamp Coupling



## Constants, Functions, Measurements used

- **Measurement: Length** in Millimeter (mm)  
*Length Unit Conversion* 
- **Measurement: Force** in Newton (N)  
*Force Unit Conversion* 
- **Measurement: Torque** in Newton Millimeter (N\*mm)  
*Torque Unit Conversion* 



## Check other formula lists

- **Bolted Joints Formulas** 

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