**Technical Data**

**Proper Bolt Axial Tightening Force and Proper Tightening Torque**

- **Axial Tightening Force for Bolt and Fatigue Limit**
  - The proper axial tightening force for a bolt should be calculated within an elasticity range up to 70% of the rated yield strength when the torque method is used.
  - The fatigue strength of bolt under repeated load should not exceed the specified tolerance.
  - Do not let the seat of a bolt or nut dent the contact area.
  - Do not break the tightened piece by tightening.

- **Calculation of Axial Tightening Force and Tightening Torque**
  - The relation between the axial tightening force $F$ and the bolt strength $S$ is represented by Equation (1).
  - The Torque Coefficient $Q$ is given by Equation (2).

  \[
  F = k \cdot d^2 \cdot S_{\text{Nominal}}; \quad Q = \frac{d}{D} \cdot \frac{S_{\text{Toughness}}}{S_{\text{Yield}}}\]

- **Calculation Example**
  - Torque P50, using Equation (1):

  \[
  F = 0.7 \cdot \frac{d^2}{D} \cdot S_{\text{Nominal}} \quad \text{and} \quad Q = \frac{d}{D} \cdot \frac{S_{\text{Toughness}}}{S_{\text{Yield}}}\]

- **Standard Value of Tightening Coefficient $Q$**
  - Normalization of bolt tightening force.

- **Initial Total Tightening Force and Tightening Torque**
  - For proper tightening, the bolt axial load should be less than or equal to the total load of the bolt.

- **Strength of Bolt**
  - Tensile Load Bolt
  - Proof Load $P_{\text{Proof}}$ = $P_{\text{Nom}} \cdot Q$

- **Safety Factor of Unifs on Bolt**
  - Yield Stress for 52100 Bearing Steel

**[Technical Data] Strength of Bolts, Screw Plugs and Dowel Pins**

- **Safety Factor of Unifs on Bolt**
  - Bolt Strength Class

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