

## Torque and preload with friction scatter

Calculate tightening torque and preload for hex head and socket head screws. The calculation considers friction scatter, tool accuracy and scatter on preload.

Based on VDI 2230:2014

### Screw type

-  Hex head
   Socket head
- ISO 4014/ISO 4017

### Clearance hole - ISO 273

- Fine
  Medium
  Coarse

### Mechanical properties of material, thread size and friction

- Property class of screw  ▼
- Thread size  ▼
- Utilization of yield strength %  ▼
- Friction range
- Thread friction value  ▼ Lower
- ▼ Upper
- Nut/bolt head friction value  ▼ Lower
- ▼ Upper

### Tool precision

-  Include tool precision  ▼

### Data used in calculation

- Yield strength Rp02  N/mm<sup>2</sup>
- Thread pitch P  mm
- Pitch diameter d2  mm



Root diameter d3	<input type="text" value="4.019"/> mm
Clearance hole dh	<input type="text" value="5.5"/> mm
Head bearing diameter dw	<input type="text" value="8.03"/> mm
Stress area As	<input type="text" value="14.2"/> mm <sup>2</sup>

## Results

Maximum tightening torque MA	<input type="text" value="6.9"/> Nm
Maximum preload FM	<input type="text" value="5.3"/> kN
Minimum preload FM	<input type="text" value="3.1"/> kN
Difference	<input type="text" value="43"/> %

Verify your calculation, maximize potential of your product.



Could you or your engineering team use a **refresher course on fastening technology**? Visit Bossard Expert Education for available engineering seminars to consider!

[Learn more](#)



Want to **verify your products are meeting quality**? Visit our 14 certified testing laboratories worldwide (3 certification).

[Learn more](#)

[back](#)

