Quick Reference Guide

Assembly tools: Safety & Ergonomics

1 Max. tool torque

≈ 2 N·m

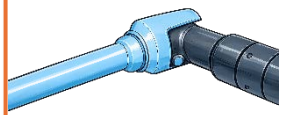
≈ 7 N·m

≈ 45 N·m

Based on ISO 11148-6, reduced in accordance with EN 1005 → above second handle or reaction bar etc.

2 No hands in front

Keep your hands away from moving parts! Remedial measures :



- Two-handed start
- Fixed protective sleeves (Rotating sleeves on socket

→ Risk reduction only

3 Max. temperature

Surface temperature at the tool surface ≤ 43°C
→ ASTM C1055-03
→ ISO 11148-6 → ISO 13732-1
→ BAUA TRBS 2111 → ISO 13732-1
→ etc.
Harmonized IEC 62841-2-2 not applicable (T_{amb}+50°K)
→ CE Blue Guide
→ ISO 13732-1

4 Explosion protection

- Check the Ex-zone
- Verify the tool's identification marking
- Note the equipment group and category
- Check the gas or dust group
- Note the temperature class / maximum surface temperature
- Take the type of protection into account → etc.

5 Electrical / HV hazards

- „EN 60900“ - „1000V“ - ⚠ are not registered trademarks
- EN 60900 does not include specific testing requirements for sockets (e.g. dielectric strength)
- User Responsibility to provide save tools

6 Sockets

Select the correct type :

ISO 2725-1
→ Hand-operated
ISO 2725-2
→ motorized, „impact“
ISO 2725-3
→ motorized, continuously
ISO/TS 21108
→ guided for impact & pulse tools

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7 Overall CE conformity

A tool with CE and a torque reaction arm with CE does not mean that overall CE conformity exists. The same applies to telescopic arms etc. in combination with the tool.

8 Vibration protection

Limit value:
$A(8) < 5\ m/s^2$

Start value:
$A(8) < 2{,}5\ m/s^2$

Tool manufacturers can only determine laboratory values (e.g. without sockets etc.). Responsibility for safety lies with the user.

9 Tool weight

Tool weight > 2,5 kg
→ hang up on balancer/make weightless
or second handle or etc.

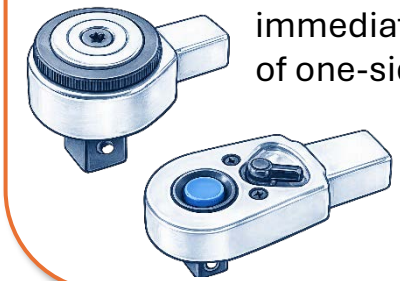
When performing precision work (small assembly systems / torques)
→ < 400 g
Guidance

10 Noise control

Noise at the workplace must be assessed as daily noise exposure level $L_{EX,8h}$ considering sound pressure level, exposure duration and impulse noise. Assessment of the real workplace noise level under load at the component is required; tool manufacturer idle-running data is not sufficient.

11 Ratchet insert tools

Regularly clean, lubricate and inspect insert ratchets for tooth flank wear; replace affected locking or rotating parts immediately in case of one-sided or severe wear.
→ Injury hazard



12 Overall ergonomics

Have workplaces professionally assessed specifically with regard to occupational safety and ergonomics for bolting processes.
“Weightless” / “reaction-free” does not necessarily mean ergonomically better!