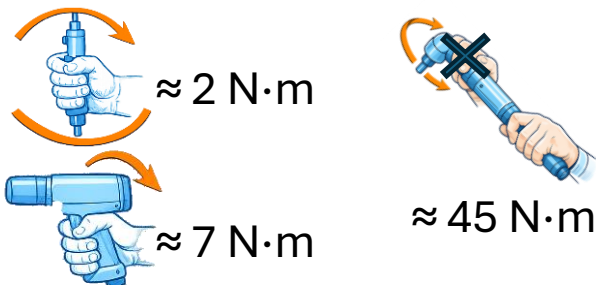


Quick Reference Guide

Assembly tools: Safety & Ergonomics

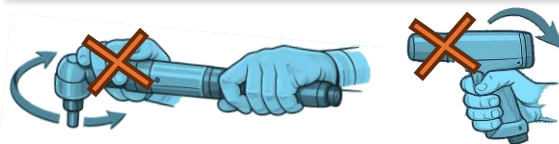


1 Max. tool torque

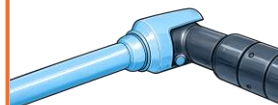


Based on ISO 11148-6, reduced in accordance with EN 1005 → above second handle or reaction bar etc.

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

Temperature at the tool surface $\leq 43^{\circ}\text{C}$

More Information see:

- ASTM C1055-03
- ISO 11148-6 → ISO 13732-1
- BAUA TRBS 2111 → ISO 13732-1
- etc.

Harmonized IEC 62841-2-2

not applicable ($T_{\text{amb}} + 50^{\circ}\text{K}$)

→ 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 safe 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:
 $A(8) < 5 \text{ m/s}^2$

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

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



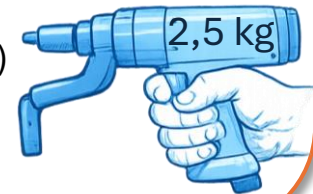
9 Tool weight

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

When performing precision work (small assembly systems / torques)

→ $< 400 \text{ g}$

Guidance



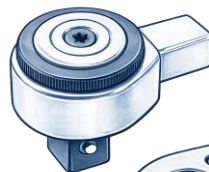
10 Noise control



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!

