Torque Wrench Extension (Crowfoot) Correction

Setting of a torque wrench used with an extension or crowfoot adapter so the fastener gets the torque wanted, from the wrench length and extension length.

Method: Moment balance about the fastener

Input parameters

Unit system: SI

Parameter	Value	Unit
Torque wanted at the fastener	200.00	N·m
Wrench length (hand grip to square drive)	400.00	mm
Extension length in line (negative if folded back)	60.000	mm

Calculated results

Parameter	Value	Unit
Setting on the wrench T_a L/(L + E)	173.91	N·m
Correction ratio	0.86957	

Notes for this case

- An extension at 90° to the handle needs no correction.

Formula and method

$$T_w = T_a \frac{L}{L + E}$$

Variables

T_a	Torque wanted at the fastener	N·m
L	Wrench length (hand grip to square drive)	m
E	Extension length in line (negative if folded back)	m
T_w	Setting on the wrench T_a L/(L + E)	N·m
$L/(L+E)$	Correction ratio	-

Method and standards

Moments about the fastener.

Assumptions and limits

- Only in-line (E positive) or folded-back (E negative) extensions are covered. For an extension at an angle α to the wrench, use the effective extension E cos α in place of E; at 90° no correction is needed.
- Extension in line with the wrench.

References

- Moment balance about the fastener

Report details

Report reference	FCC-25K1-XNJF (the same inputs always give the same reference)
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Calculator	Torque Wrench Extension (Crowfoot) Correction
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Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/mechanical/machine-design/torque-wrench-extension

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.