

ACHIEVE THE CORRECT TIGHTENING TORQUE – even when using insert tools with an extended length.

When you tighten fasteners using inserts whose extension length S deviates from the standard length S_F , it is necessary to recalculate the setting/display value for the torque wrench in use.

Caution! If adaptors are combined with inserts or special tools, use the sum of the extensions = ΣS . Where the special tool is angled to the side, adjusted reading or setting value W_K will have to be determined empirically.

$$W_K = \frac{M_A \cdot L_F}{L_K} \left[\frac{\text{N} \cdot \text{m} \cdot \text{mm}}{\text{mm}} \right]$$

$$W_K = \frac{M_A \cdot L_F}{L_F - S_F + S \text{ (bzw. } \Sigma S \text{)}}$$

M_A = Desired tightening torque

W = Reading/setting $W = M_A$

W_K = Adjusted reading or setting value $W_K \neq M_A$

L_F = Functional length (see dimension table for torque wrenches)

L_K = Adjusted functional length
 $L_K = L_F - S_F + S$ (or ΣS)

S = Extension of STAHLWILLE inserts or special tools (see dimension table for inserts)

S_F = Standard extension (see dimension table for torque wrenches)

ΣS = Total of all extensions of the attached inserts
 $S_{\text{adaptor}} + S_{\text{insert}} + \dots$



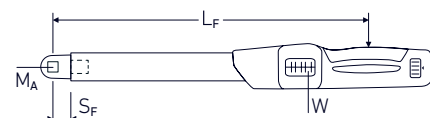
Normal situation

Torque wrench No 730N/10 combined with
square drive insert tool No 734/5 and socket size 13 mm

Required tightening torque for the screw $M_A = 40 \text{ N-m}$

Dimension table for torque wrenches: $S_F = 17.5 \text{ mm}$, $L_F = 336 \text{ mm}$

Dimension table for square drive insert tools: $S = 17.5 \text{ mm}$



No adjustment to setting value required
on torque wrench.

$\rightarrow S = S_F$
 $\rightarrow W = M_A$

Example 1: adjusted setting value (1 insert tool)

Torque wrench No 730N/20 combined with
ring insert tool No 732/40 size 36 mm

Required tightening torque for the screw $M_A = 190 \text{ N-m}$

Dimension table for torque wrenches: $S_F = 25 \text{ mm}$, $L_F = 424.5 \text{ mm}$

Dimension table for ring insert tools: $S = 28 \text{ mm}$

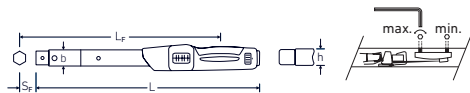
And this is what it looks like in the catalogue:

730N



Service MANOSKOP® torque wrench

- dual scale N-m/in-lb
- with holder for interchangeable insert tools
- with QuickRelease safety lock
- counter-clockwise tightening by turning the insert tools over
- accuracy ± 4



Product no.	Size	N-m	in-lb	N-m	in-lb	fine scale	mm	L_F mm	S_F mm
50181005	5	10-50	7-37	5	1	0,25 N-m	9 x 12	280,5	17,5
50181010	10	20-100	15-75	10	2,5	0,5 N-m	9 x 12	336	17,5
50181012	12	25-130	20-95	10	2,5	0,5 N-m	14 x 18	379	25
50181020	20	40-200	30-150	10	5	1 N-m	14 x 18	424,5	25
50181040	40	80-400	60-300	20	10	2 N-m	14 x 18	564,5	25
50181065 *	65	130-650	100-480	50	20	2,5 N-m	14 x 18	848	25
50181365	III/65	130-650	100-480	50	20	2,5 N-m	22 x 28	900	55
50181080	80	160-800	120-600	100	25	5 N-m	22 x 28	1167	55
50181100	100	200-1000	150-750	100	25	5 N-m	22 x 28	1352	55

$$W_K = \frac{M_A \cdot L_F}{L_F - S_F + S} = \frac{190 \text{ N-m} \cdot 424,5 \text{ mm}}{424,5 \text{ mm} - 25 \text{ mm} + 28 \text{ mm}} = \frac{190 \text{ N-m} \cdot 424,5 \text{ mm}}{427,5 \text{ mm}} = 188,7 \text{ N-m}$$

732/40



Product no.	$\varnothing$ mm	mm	b mm	h mm	S mm
58224013	13	14 x 18	22,5	11	25
58224014	14	14 x 18	23	11	25
58224015	15	14 x 18	24	11	25
58224016	16	14 x 18	25,5	12	25
58224017	17	14 x 18	27	12	25
58224018	18	14 x 18	29	13	25
58224019	19	14 x 18	30,5	13	25
58224021	21	14 x 18	33	15	25
58224022	22	14 x 18	34,5	15	25
58224024	24	14 x 18	37,5	15	25
58224027	27	14 x 18	42,5	17	25
58224028	28	14 x 18	45,5	19	25
58224030	30	14 x 18	46	19	25
58224032	32	14 x 18	47,5	19	25
58224034 *	34	14 x 18	52	19	28
58224036 *	36	14 x 18	54	19	28
58224041 *	41	14 x 18	60	20	30

Adjusted setting value $W_K = 188.7 \text{ N-m}$
 $\rightarrow$ value to set 189 N-m

$\rightarrow S \neq S_F$
 $\rightarrow W \neq M_A$

Example 2: adjusted reading (insert tool and adaptor)

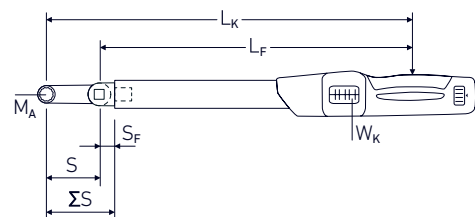
Torque wrench No 730N/10 combined with
square drive insert tool No 734/5 and adaptor No 447 size 10 mm

Required tightening torque for the screw $M_A = 25 \text{ N-m}$

Dimension table for torque wrenches: $L_F = 336 \text{ mm}$, $S_F = 17.5 \text{ mm}$

Dimension table for square drive insert tools: $S_F = 17.5 \text{ mm}$

Dimension table for adaptors: $\Sigma S = 50.8 \text{ mm}$



Adjusted setting value $W_K = 21.7 \text{ N-m}$

$\rightarrow \Sigma S \neq S_F$
 $\rightarrow W \neq M_A$

$$W_K = \frac{M_A \cdot L_F}{L_F - S_F + \Sigma S} = \frac{25 \text{ N-m} \cdot 336 \text{ mm}}{336 \text{ mm} - 17.5 \text{ mm} + 17.5 \text{ mm} + 50.8 \text{ mm}} = \frac{25 \text{ N-m} \cdot 336 \text{ mm}}{386.8 \text{ mm}}$$