Torque tools, Torque testers

Torque family
Overview

Torque wrenches

cut-out	indicating	No	Capacity	Page
○	○	714	1–1000 Nm	**180**
	○	714 AUDIT	2–400 Nm	**182, 183**
○	○	730D	10–1000 Nm	**184**
○		730N	2–1000 Nm	**186**
○		730	4–800 Nm	**187**
○		720Nf	160–800 Nm	**188**
○		721	6–300 Nm	**188**
○		721Nf	160–1000 Nm	**189**
○		755	1,5–300 Nm	**190**
	○	713R	3–400 Nm	**191**
	○	712R/6	3–60 Nm	**191**
	○	71	160–800 Nm	**192, 193**
	○	73Nm/15	2–15 Nm	**193**

Torque screwdrivers

cut-out	indicating	No	Capacity	Page
○		775	2–1000 cNm	**194**
	○	760	15–600 cNm	**195**

MULTIPOWER

No	Range	Page
MP300	–5000 Nm	**205**
MP100–1500	–1500 Nm	**206**

Torque testers and calibrating units

No	Range	Page
7794 perfectControl	1–1000 Nm	**210**
7791 Manutork	1–1000 Nm	**214**
7792 Manutork	20–3000 Nm	**215**
Test attachments for torque screwdrivers 7790, 7791-2	–10 Nm	**215**
7707 W Torque tester	0,4–1100 Nm	**216**

Insert tools for torque wrenches

! Further details **on pp. 197-203**


71/80


721Nf


720Nf


730D


713R


7707 W


714


7794-2


730N


721


7791 + 7791-2


MP100-1500


730


755


73Nm/15


MP300


760

MANOSKOP® 714

Electromechanical torque and angle-controlled wrench

Benefits at a glance:

- Indicating and with cut-out
- 4 measuring methods (torque, angle, torque backed up by angle, angle backed up by torque)
- Freely configurable menu structure
- Includes Sensomaster software for easy configuration of the tool
- 3 function modes: cut-out, peak (indicating mode displaying peak reading) and track (indicating mode displaying current value)
- Angle-controlled measurement without a reference arm
- Data storage (≤ 2,500 tightening jobs)
- Acoustic and visual assessment of the joint
- Clockwise and anticlockwise tightening
- Tactile and acoustic trigger signals
- Torque and angle are simultaneously visible
- All readings are independent of the point of application of force with sizes 1, 2 and 4
- Display deviation value ± 2 % for torque and ± 1% for angle

1 High-definition graphical colour display with additional side-mounted indicator lamps

2 Automatic key-lock prevents inadvertent changes

3 Fast, accurate setting via keypad

4 Own ident number can be stored in the wrench

5 Indicator lamps clearly visible from all sides
Yellow light: advance warning threshold reached
Green light: within the target range
Red light: reading is outside the tolerance range

6 In a sturdy plastic case with foam inlays (sizes 40–100 in steel case)
With certificate

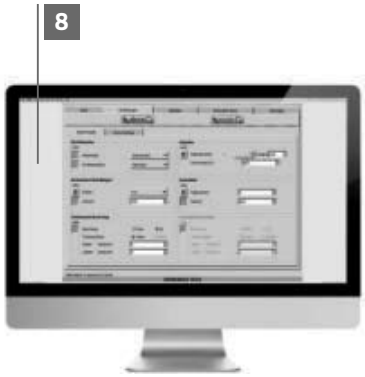
NEW

Also available with adaptor for 22 x 28 mm

- Tighten large torques effortlessly
- High long-term durability
- 650 – 1000 N m

No 7195-2

No 7160



7 Optional extras: Li-Ionen battery No 7195-2 and charger No 7160

8 Individually configurable menus

9 Micro USB interface

10 Battery compartment with smooth-action bayonet fitting

11 Up to 200 joints can be programmed in up to 25 sequences

12 The wrench reminds the user automatically when calibration is due – either by the number of joints or the time interval

! Further details **on pp. 180**

Sensotork® 713R

Electronic torque wrench/ angle-controlled wrench

Benefits at a glance:

- Angle-controlled measurements without a reference arm
- Broad measuring range (5% – 100% of rated value)
- Extremely wide range of angle measurement
- Units of measurement N m / ft.lb / in.lb
- Clockwise and anticlockwise use
- For use with all insert tools 9x12 and 14x18 mm
- QuickSelect rapid recall of predefind sets of operating parameters
- Defined sequence – a number of repeated joints can be grouped as
- a defined sequence
- Readings can either be directly stored, transmitted to the PC or simply displayed
- Password protection tamper proof use
- Freely selectable names for each series of test
- Various languages available
- Works-specific identifier
- Programmable via PC
- Resistant to oils, grease, fuels, brake fluids and Skydrol
- Wide range of application: –20°C to +60°C
- Meets requirements of DKD-R 3-7, Class 2
- Deviation of indication ± 1%

1 Warning signals: acoustic (buzzer), tactile (vibration in the handle), visual (LEDs and display). The point at which the warning signal is triggered can be freely set

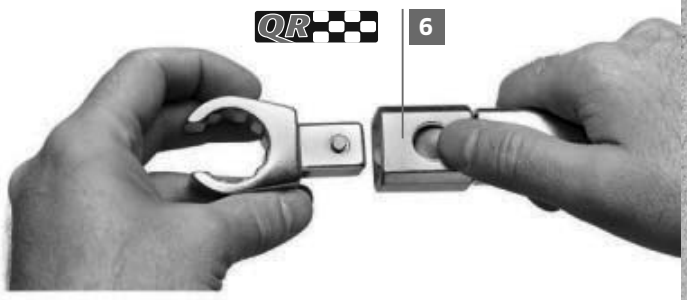
2 Amazingly simple handling
All functions are selected using the arrow keys. The visual guidance system makes operation a simple matter

3 Measurements independent of the point of application of force (sizes 6 and 20)

4 Easy extension setting
Where the insert tool requires an extension adjustment, simply enter the new value. Recalculation using complicated formulae is no longer necessary

5 Data output USB interface

6 QuickRelease
Firm locking and rapid change of any insert tools



! Further details **on pp. 191**

MANOSKOP® 730D

Electromechanical torque wrench

Benefits at a glance:

- Cut-out and indicating
- Displays the torque actually applied after the wrench cuts out. In this way, the user has the opportunity to optimise his or her working methods.
- Units of measurement: N m / ft.lb / in.lb
- Automatic keypad lock
- Display also works for anticlockwise torque
- Angle-controlled measurement without a reference arm using a supplementary module
- Overload protection by means of acoustic and visual signals
- Automatic compensation to achieve correct tightening torque even if a changed extension is entered
- Different tolerance limits can be set for each joint
- Visual red and green signals in the display confirm the status of the joint
- Additional security for presets using PIN code
- Automatic notification of the next calibration date
- Deviation of indication ± 2%

Measure, cut-out and record: When the preset torque is reached, the torque wrench cuts out and indicates this fact to the user via a definite tactile and audible signal. The tightening torques are stored. The data can be transferred to a PC for evaluation and documentation.

1 The square drive enables a broad range of insert tools

2 Dual stop signal with tactile and acoustic cut-out signals

3 Easy-to-read display

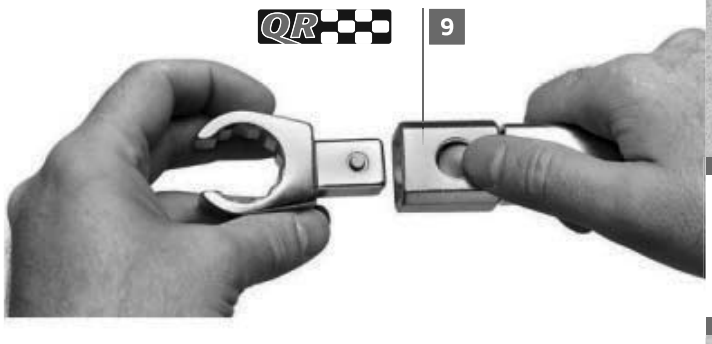
4 Rapid setting
The convenient keypad enables the torque wrench to be quickly and easily set

NEW

Also available with adaptor for 22 x 28 mm

- Tighten large torques effortlessly
- High long-term durability
- 650 – 1000 N m

7395-1



5 Power supply two 1.5 V AA batteries

6 Angle controlled tightening
Simply attach the Angle Module No 7395-1 and connect the cable to the interface

7 Data output USB interface

8 2-component handle has ergonomically designed, green softer layers and is resistant to oils, grease, fuels, brake fluids and Skydrol.

9 QuickRelease safety lock

! Further details **on pp. 184**

MANOSKOP® 730N

Mechanical torque wrench

Benefits at a glance:

- Accurate one-handed setting – quick & easy control using the knob at the end of the handle
- Audible setting positions
- Fail-safe setting mechanism in the knob
- Clearly readable twin scale (N m and ft.lb)
- Noticeable double signals when the preset torque is reached
- Square drives with
- QuickRelease safety locks – for 9x12, 14x18 and 22x28 mm
- Handle is resistant to oils, grease, fuels, brake fluids and Skydrol
- Deviation of indication ± 3%

1 Protected mechanism extremely resistant to mechanical wear, protected against dirt inside the outer housing

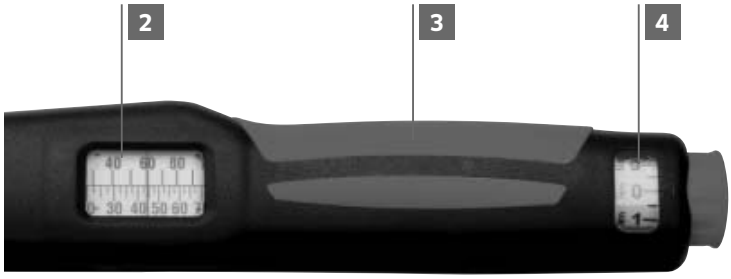
2 Easily readable double scale. The colour differentiation between the N m and ft.lb scales simplifies fine setting

3 Two-component handle made of extremely tough, impact resistant plastic with a kind-to-the-hands softer layer

4 Ring scale with fine settings for the black measuring range on the twin scale

5 QuickSelect rapid setting: Pull, set, lock. All using the one setting knob

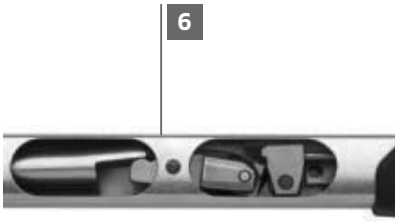
6 No need for manual reset to zero thanks to the wear-free triggering cam system. The measuring element is only under load while force is being applied.



NEW

Also available with adaptor for 22 x 28 mm

- Tighten large torques effortlessly
- High long-term durability
- 650 – 1000 N m

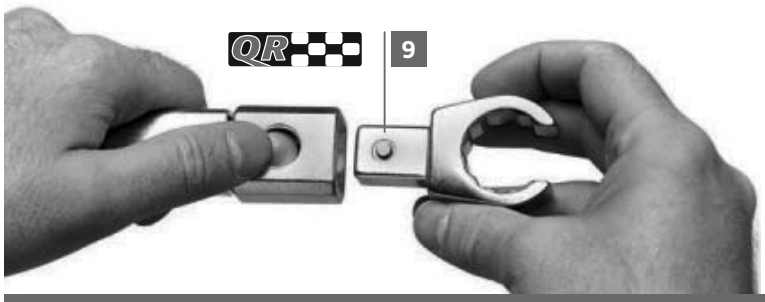


7 The square drive enables a broad range of tightening tools

8 Rapid adjustment from outside, no disassembly of the torque wrench

9 QuickRelease safety lock
Firm locking and rapid change of insert tools thanks o the QuickRelease safety lock

10 Integrated clockwise and anticlockwise operation simply by turning over the wrench and insert tool



! Further details **on pp. 186**

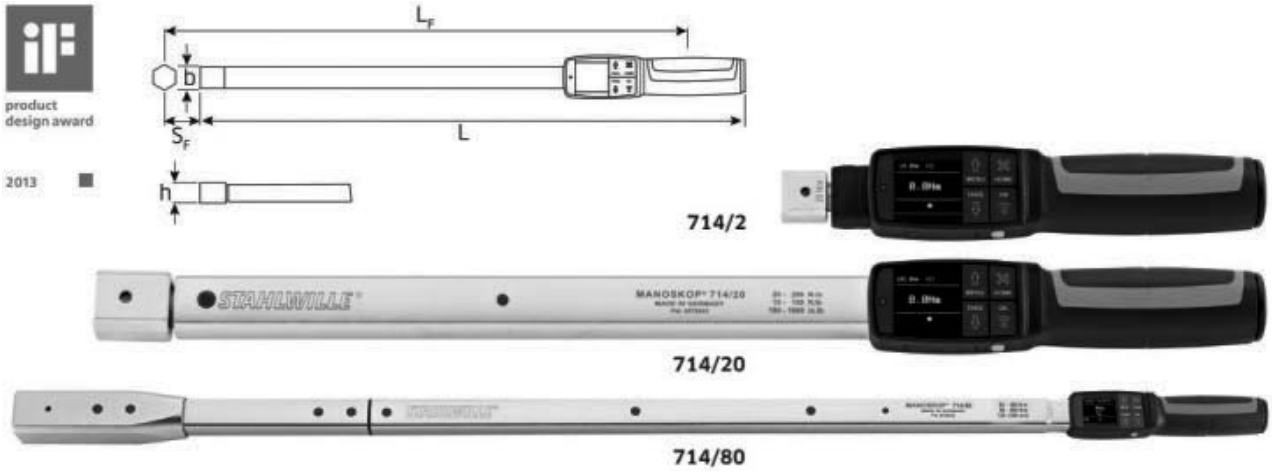
MANOSKOP® 714 – indicating and cut-out Electromechanical torque and angle-controlled wrench

- 4 measuring modes (torque, angle, torque backed up by angle, angle backed up by torque)
- high-definition colour display with additional side-mounted indicator lamps
- freely configurable menu structure
- optionally: Li-ion battery No 7195-2 and charger No 7160
- 3 function modes: cut-out, peak (indicating mode with peak value) and track (indicating mode with current value)
- Micro USB interface
- bayonet connection for battery compartment
- QuickRelease safety lock change system for insert tools
- angle-controlled measurement without a reference arm Data storage (≤ 2500 tightening jobs)
- as many as 200 joints can be programmed in up to 25 preset sequences.
- different tolerance limits can be set for each joint
- acoustic and visual assessment of the joint
- rapid, accurate setting via keypad
- the automatic keypad lock prevents inadvertent changes
- overload protection by means of acoustic and visual signals and a fail-safe system (clockwise)
- automatic notification of the next calibration date, either by the number of joints or the time interval
- fully automated calibrating and adjusting using the perfectControl calibrating and adjusting unit No 7794-2 (torque) or 7794-3 (torque and angle)

196-203

- units of measure: N m, ft.lb, in.lb.
- tightening torque is automatically corrected if a deviating extension is entered
- immediately reusable after release
- clockwise and anticlockwise tightening – it may be necessary to refit the insert tool rotated through 180° for anticlockwise tightening in the cut-out mode
- tactile and acoustic trigger signal.
- torque and angle are simultaneously visible
- all readings are independent of the point of application of force (with sizes 1, 2 and 4)
- safe handling due to ergonomically designed handle (resistant to oils, grease, fuels, brake fluid and Skydrol)
- 2 certificates (torque, angle)
- in sturdy plastic case (size 40-100 in steel case)
- design patent, patent
- supplied with Sensomaster Basic software, USB cable, 4 AAA/LR03 micro-batteries, 1.5 V. AAA, 1.2 V, micro NiMH rechargeable batteries can be used
- display resolution, angle 0.1°
- display deviation value, angle ±1%, ±1 digit
- display resolution, torque ≤ 60 N m: 0.01 N m; > 60 N m: 0.1 N m
- display deviation value, torque ±2%, ±1 digit

714 **Basic wrenches with tool carrier for insert tools**



Code	size				mm	b mm	h mm	L mm	L_F mm	S_F mm	g	g with box
96 50 09 01	**1**	1–10 N m	0.7 –7.5 ft.lb	9–90 in.lb	9x12	28	23	226	188	17.5	370	795
96 50 09 02	**2**	2–20 N m	1.5–15 ft.lb	18–180 in.lb	9x12	28	23	226	188	17.5	380	805
96 50 09 04	**4**	4–40 N m	3–30 ft.lb	36–360 in.lb	9x12	28	23	252	214	17.5	420	845
96 50 09 06	**6**	6–60 N m	4.5–45 ft.lb	54–540 in.lb	9x12	28	23	393	355	17.5	810	1235
96 50 09 10	**10**	10–100 N m	7.4–75 ft.lb	90–900 in.lb	9x12	28	23	466	428	17.5	1085	1655
96 50 09 20	**20**	20–200 N m	15–150 ft.lb	180–1800 in.lb	14x18	28	23	547	516	25	1361	1896
96 50 09 40	**40**	40–400 N m	30–300 ft.lb	360–3600 in.lb	14x18	28	23	687	656	25	1765	5155
96 50 09 65	**65** ✹	65–650 N m	48–480 ft.lb	580–5800 in.lb	22x28	30.6	25.6	890	890	55	3222	6017
96 50 09 80	**80** ✹	80–800 N m	60–600 ft.lb	720–7200 in.lb	22x28	30.6	25.6	1158	1158	55	4572	8662
96 50 01 00	**100** ✹	100–1000 N m	74–750 ft.lb	900–9000 in.lb	22x28	30.6	25.6	1343	1343	55	4990	9080

714R Basic wrenches with ratchet insert tool

Code	size				mm	"	g	g with box
96 50 10 01	**1**	1–10 N m	0.7–7.5 ft.lb	9–90 in.lb	9x12	1/4	432	857
96 50 10 02	**2**	2–20 N m	1.5–15 ft.lb	18–180 in.lb	9x12	1/4	442	867
96 50 10 04	**4**	4–40 N m	3–30 ft.lb	36–360 in.lb	9x12	1/4	482	907
96 50 10 06	**6**	6–60 N m	4.5–45 ft.lb	54–540 in.lb	9x12	3/8	965	1390
96 50 10 10	**10**	10–100 N m	7.4–75 ft.lb	90–900 in.lb	9x12	1/2	1232	1657
96 50 10 20	**20**	20–200 N m	15–150 ft.lb	180–1800 in.lb	14x18	1/2	1663	2198
96 50 10 40	**40**	40–400 N m	30–300 ft.lb	360–3600 in.lb	14x18	3/4	2275	5665
96 50 10 65	**65** ✹	65–650 N m	48–480 ft.lb	580–5800 in.lb	22x28	3/4	5137	7932
96 50 10 80	**80** ✹	80–800 N m	60–600 ft.lb	720–7200 in.lb	22x28	3/4	6487	10577
96 50 11 00	**100** ✹	100–1000 N m	73–735 ft.lb	885–8850 in.lb	22x28	3/4	6905	10995

7732-1 SENSOMASTER Premium Assembly software

✹

for MANOSKOP® 714.

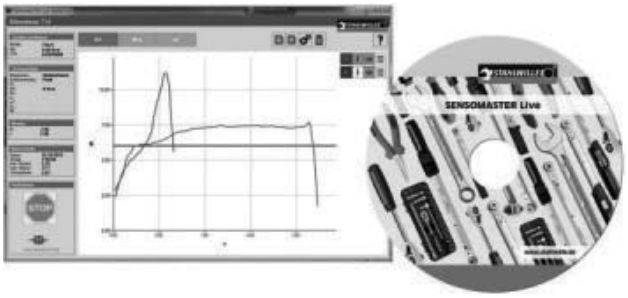
- For recording additional information on the tightening operation (e.g. employee name, assembly designation, operation). As many as 5 data fields can be configured.
- Sequence control on the basis of information recorded.
- Support for various workflows.
- The torque wrench can be blocked at the end of the tightening sequence.
- Work sequences can be resumed after an interruption.
- Automatic export of joint data for further processing on a PC. User-specific content is possible on request.
- Automatic log data print-out. User-specific formats are possible on request.

Code	g
58 52 10 34	54

7732-2 SENSOMASTER Live software

✹

- Record tightening operations with the MANOSKOP® 714 and 714 AUDIT.
- Representation of torque over time, angle over time, torque over angle.
- Representation of several curves simultaneously.
- Data export for further processing.



Code	g
58 52 10 35	54

7195-2 Li-ion battery for No 714

Code	g
54 10 11 95	100

7762 Docking station for No 714

stationary base for securely connecting angle-controlled torque wrench No 714 to a PC via a USB port.

Code	g
52 11 00 62	421

7160 Charging dock for Li-ion battery No 7195-2

including charger
Input:
100 V–240 V AC ,
Output: 4.2 V DC,
with interchangeable socket adaptors.

Code	g
54 10 00 60	200

7762-1 Rest for docking station No 7762

for securely supporting long angle-controlled torque wrenches No 714 from size 6 up.

Code	g
52 11 01 62	520

5

MANOSKOP® 714 AUDIT – indicating electronic angle-controlled torque wrench for joint auditing

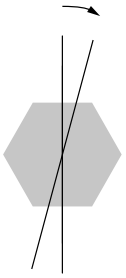
- 2 audit modes (prevail torque and loosen-tighten)
- 4 measuring modes (torque, angle, torque backed up by angle, angle backed up by torque)
- high-definition colour display with additional side-mounted indicator lamps
- freely configurable menu structure
- optionally: Li-ion battery No 7195-2 and charger No 7160
- 2 function modes: peak (indicating mode with peak value) and track (indicating mode with current value)
- Micro USB interface
- bayonet connection for battery compartment
- QuickRelease safety lock change system for insert tools
- angle-controlled measurement without a reference arm

196-203

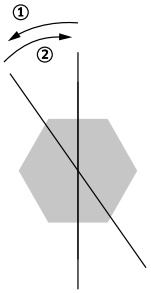
- Data storage (≤ 2500 tightening jobs)
- as many as 200 joints can be programmed in up to 25 preset sequences.
- different tolerance limits can be set for each joint
- acoustic and visual assessment of the joint
- rapid, accurate setting via keypad
- the automatic keypad lock prevents inadvertent changes
- overload protection by means of acoustic and visual signals
- automatic notification of the next calibration date, either by the number of joints or the time interval
- fully automated calibrating and adjusting using the perfectControl calibrating and adjusting unit No 7794-2 (torque) or 7794-3 (torque and angle)
- units of measure: N m, ft.lb, in.lb.
- tightening torque is automatically corrected if a deviating extension is entered
- immediately reusable after release
- clockwise and anticlockwise tightening
- torque and angle are simultaneously visible
- all readings are independent of the point of application of force
- safe handling due to ergonomically designed handle (resistant to oils, grease, fuels, brake fluid and Skydrol)
- 2 certificates (torque, angle)
- in sturdy plastic case (size 40 in steel case)
- design patent
- supplied together with SENSOMASTER Premium Audit software (single-installation licence, additional licences on request), USB cable, 4 AAA/LR03 micro-batteries, 1.5 V. AAA, 1.2 V, micro NiMH rechargeable batteries can be used
- display resolution, angle 0.1°
- display deviation value, angle ±1%, ±1 digit
- display resolution, torque d 60 N m: 0.01 N m; > 60 N m: 0.1 N m
- display deviation value, torque ±1%, ±1 digit

714 AUDIT Basic wrenches with tool carrier for insert tools

2 audit modes

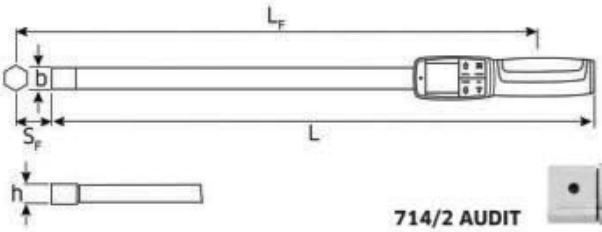


Prevail torque:
After torqueing, a further defined angle is applied with the torque wrench. When the target angle is reached, the torque applied at that moment is stored.



Loosen-tighten:
The joint is loosened by a defined angle in the first step and then tightened again to the original position. When the target angle is reached, the torque applied at that moment is stored.

product design award 2013



714/2 AUDIT

714/20 AUDIT

Code	size				mm	b mm	h mm	L mm	L_F mm	S_F mm	g	g with box
96 50 12 02	**2**	2–20 N m	1.5–15 ft.lb	18–180 in.lb	9x12	28	23	226	188	17.5	380	805
96 50 12 10	**10**	10–100 N m	7.4–75 ft.lb	90–900 in.lb	9x12	28	23	466	428	17.5	1085	1655
96 50 12 20	**20**	20–200 N m	15–150 ft.lb	180–1800 in.lb	14x18	28	23	547	516	25	1361	1896
96 50 12 40	**40**	40–400 N m	30–300 ft.lb	360–3600 in.lb	14x18	28	23	687	656	25	1765	5155

available from June 2014

714R AUDIT Basic wrenches with ratchet insert tool

714R/2 AUDIT

714R/20 AUDIT

Code	size				mm	"	g	g with box
96 50 14 02	**2**	2–20 N m	1.5–15 ft.lb	18–180 in.lb	9x12	1/4	442	867
96 50 14 10	**10**	10–100 N m	7.4–75 ft.lb	90–900 in.lb	9x12	1/2	1232	1657
96 50 14 20	**20**	20–200 N m	15–150 ft.lb	180–1800 in.lb	14x18	1/2	1663	2198
96 50 14 40	**40**	40–400 N m	30–300 ft.lb	360–3600 in.lb	14x18	3/4	2275	5665

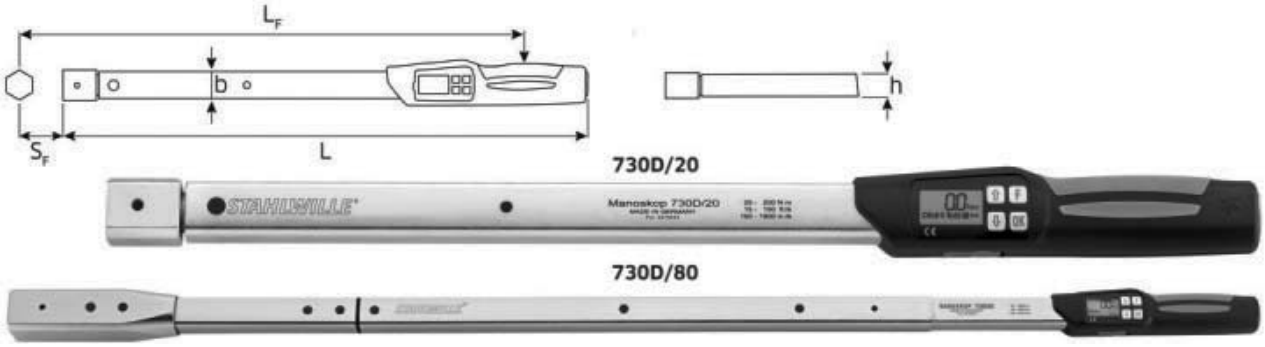
available from June 2014

Service work & series production MANOSKOP® – indicating and cut-out

196-203

- tactile and acoustic trigger signal
- mount for interchangeable insert tools
- QuickRelease safety lock
- fast setting using convenient keypad
- automatic compensation to achieve correct tightening torque even if a changed extension is entered
- overload protection by means of acoustic and visual signals
- automatic keypad lock prevents inadvertent changes
- angle-controlled measurements without a reference arm using Angle Module No 7395-1 (refer to page 185)
- display also works for anticlockwise torque
- units of measurement: N m, ft.lb, in.lb
- different tolerance limits can be set for each joint
- visual red and green signals in the display confirm the status of the joint
- additional security for presets (function mode, trigger or preset value, unit of measurement, tolerance, save, deviating extension) using PIN code
- up to 7.500 measurements can be stored
- USB interface
- automatic notification of the next calibration date
- calibration using perfectControl calibrating unit No 7794 or calibration system No 7706
- two-component handle with ergonomically designed green softer layers (resistant to oils, grease, fuels, brake fluids and Skydrol)
- with certificate
- in sturdy plastic case (sizes 40-100 in steel case)
- patent
- supplied with two 1.5 V AA batteries. AA/LR6, 1.2 V rechargeable cells may also be used
- display deviation value ± 2%

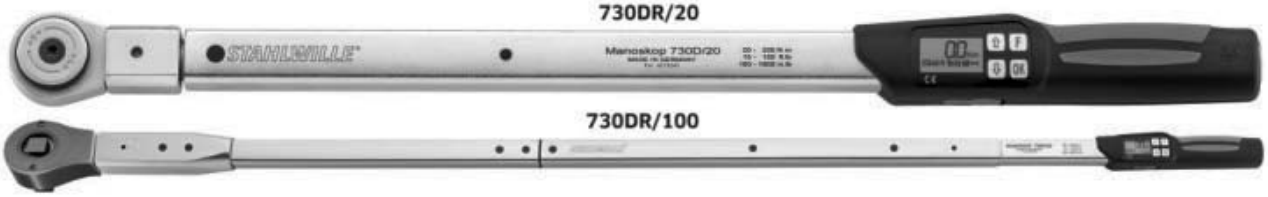
730D Basic wrenches with tool carrier for insert tools



Code	size				Setting/display resolution N m	ft.lb	in.lb	mm	b mm	h mm	L mm	L_F mm	S_F mm	g	g with box
96 50 17 10	**10**	10–100 N m	7.4–75 ft.lb	90–900 in.lb	0.2/0.1	0.2/0.1	2/1.0	9x12	28	23	467	426.5	17.5	1085	1510
96 50 17 20	**20**	20–200 N m	15–150 ft.lb	180–1800 in.lb	0.5/0.1	0.5/0.1	5/1.0	14x18	28	23	548	515	25	1361	1896
96 50 17 40	**40**	40–400 N m	30–300 ft.lb	360–3600 in.lb	1.0/0.1	1.0/0.1	10/1.0	14x18	28	23	688	655	25	1765	5155
96 50 17 65	**65***	65–650 N m	48–480 ft.lb	580–5800 in.lb	1.0/0.1	1.0/0.1	10/1.0	14x18	30.6	25.6	870	837	25	3300	6000
96 50 19 65	**II/65** ✹	65–650 N m	48–480 ft.lb	580–5800 in.lb	1.0/0.1	1.0/0.1	10/1.0	22x28	30.6	25.6	892	889	55	3224	6000
96 50 20 80	**80** ✹	80–800 N m	60–600 ft.lb	720–7200 in.lb	1.0/1.0	1.0/1.0	10/1.0	22x28	30.6	25.6	1160	1157	55	4577	8667
96 50 21 00	**100** ✹	100–1000 N m	74–750 ft.lb	900–9000 in.lb	1.0/1.0	1.0/1.0	10/1.0	22x28	30.6	25.6	1344	1341	55	4995	9085

* recommended ratchet insert tool No 735/40HD

730DR Basic wrenches with ratchet insert tool



Code	size				Setting/display resolution N m	ft.lb	in.lb	mm	■ "	g	g with box
96 50 18 10	**10**	10–100 N m	7.4–75 ft.lb	90–900 in.lb	0.2/0.1	0.2/0.1	2/1.0	9x12	1/2	1232	1657
96 50 18 20	**20**	20–200 N m	15–150 ft.lb	180–1800 in.lb	0.5/0.1	0.5/0.1	5/1.0	14x18	1/2	1663	2198
96 50 18 40	**40**	40–400 N m	30–300 ft.lb	360–3600 in.lb	1.0/0.1	1.0/0.1	10/1.0	14x18	3/4	2232	4722
96 50 18 65	**65**	65–650 N m	48–480 ft.lb	580–5800 in.lb	1.0/0.1	1.0/0.1	10/1.0	14x18	3/4	3767	6530
96 50 20 65	**II/65** ✹	65–650 N m	48–480 ft.lb	580–5800 in.lb	1.0/0.1	1.0/0.1	10/1.0	22x28	3/4	3994	6757
96 50 18 80	**80** ✹	80–800 N m	60–600 ft.lb	720–7200 in.lb	1.0/0.1	1.0/0.1	10/1.0	22x28	3/4	6492	10582
96 50 18 00	**100** ✹	100–1000 N m	74–750 ft.lb	900–9000 in.lb	1.0/0.1	1.0/0.1	10/1.0	22x28	3/4	6910	11000

7759-3 USB adaptor, jack cable and software No 7732 for No 730D

Documentation and management of readings on a PC
- Read out stored wrench data and joint readings:
  - Joint identifier
  - Tool serial number
  - Date and time of tightening operation
  - Target torque or target angle
  - Torque level at which the tool cuts out
  - Tightening torque or angle reached
  - Tolerances
  - Joint evaluation
- Storage of joint data in a database
- Delete or print highlighted joints from the database
- Export displayed joint data to a CSV file (compatible with Excel)
- 13 languages
- User management
- Define new PIN
- Delete joint data stored in wrench

System requirements:
- PC
- Microsoft Windows 98 SE or compatible operating system with USB support
- USB connection
- Installed ODBC driver for Access data

Code	L m	g
96 58 36 27	1.5	137

7395-1 Angle Module for No 730D

Patents applied for, angle-controlled measurement without a reference arm. For torque wrench No 730D (sizes 10-65) from software release 1.5.8. Torque wrenches No 730D fitted with older releases of the software can be upgraded. Simply attach the module and connect to the torque wrench interface and the No 730D can be used for angle controlled tightening. The measurements are read off and settings made via the torque wrench.
When the preset snug point is reached, the torque wrench automatically switches over to angle-controlled measurement in degrees. Depending on the options selected, the torque wrench will either cut out when the preset angle is reached or an alarm is heard. One 1.5 V battery is included in the package. Deviation of indication ± 1%.

Code	g
96 58 36 28	387

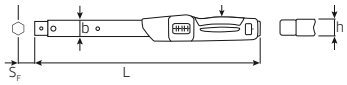
5

Service MANOSKOP® 730N

196-203

- cut-out type
- mount for interchangeable insert tools
- QuickRelease safety lock
- fast, accurate setting thanks to QuickSelect quick-action adjuster
- dual stop signal
- easy-to-read double scale with colour coding to differentiate between N m and ft.lb scales
- the measuring element is only under load while force is being applied, no need for manual reset to zero
- can be applied for either clockwise or anticlockwise tightening by turning the inserts over
- any force applied to the tool after the "click" or applied in the opposite direction to the current function – e.g. forcible loosening of a jammed screw - does not act on the trigger mechanism and cannot cause damage to it.
- two-component handle with ergonomically designed green softer layers (resistant to oils, grease, fuels, brake fluids and Skydrol)
- calibration using perfectControl calibrating unit No 7794 or calibration system No 7706. Adjustment without disassembly.
- with certificate
- registered design
- display deviation value ± 3%

730N Basic wrenches with tool carrier for insert tools

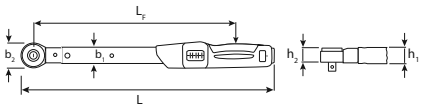


Code	size					Fine scale	mm	b mm	h mm	L mm	L_F mm	S_F mm	g
50 18 10 02	**2**	2–20 N m	20–180 in.lb	1 N m	10 in.lb	0.2 N m	9x12	28	23	275	226	17.5	737
50 18 10 05	**5**	10–50 N m	7–37 ft.lb	5 N m	1 ft.lb	0.25 N m	9x12	28	23	330	280.5	17.5	831
50 18 10 10	**10**	20–100 N m	15–75 ft.lb	10 N m	2.5 ft.lb	0.5 N m	9x12	28	23	386	336	17.5	988
50 18 10 12	**12**	25–130 N m	20–95 ft.lb	10 N m	2.5 ft.lb	0.5 N m	14x18	28	23	421	379	25	1128
50 18 10 20	**20**	40–200 N m	30–150 ft.lb	10 N m	5 ft.lb	1 N m	14x18	28	23	467	424.5	25	1264
50 18 10 40	**40**	80–400 N m	60–300 ft.lb	20 N m	10 ft.lb	2 N m	14x18	28	23	607	564.5	25	1655
50 18 10 65	**65***	130–650 N m	100–480 ft.lb	50 N m	20 ft.lb	2.5 N m	14x18	30.6	25.6	890	848	25	3231
50 18 13 65	**II/65** ✹	130–650 N m	100–480 ft.lb	50 N m	20 ft.lb	2.5 N m	22x28	30.6	25.6	911	900	55	3504
50 18 10 80	**80** ✹	160–800 N m	120–600 ft.lb	100 N m	25 ft.lb	5 N m	22x28	30.6	25.6	1178	1167	55	4882
50 18 11 00	**100** ✹	200–1000 N m	150–750 ft.lb	100 N m	25 ft.lb	5 N m	22x28	30.6	25.6	1363	1297	55	5300
50 58 10 02	**a/2**	20–180 in.lb	1.5–15 ft.lb	10 in.lb	0.5 ft.lb	2 in.lb	9x12	28	23	275	226	17.5	737
50 58 10 05	**a/5**	90–450 in.lb	7–37 ft.lb	50 in.lb	1 ft.lb	2.5 in.lb	9x12	28	23	330	280.5	17.5	831
50 58 10 10	**a/10**	180–900 in.lb	15–75 ft.lb	100 in.lb	2.5 ft.lb	5 in.lb	9x12	28	23	386	336	17.5	988
50 58 10 20	**a/20**	350–1800 in.lb	30–150 ft.lb	100 in.lb	5 ft.lb	10 in.lb	14x18	28	23	467	424.5	25	1264
50 58 10 40	**a/40**	60–300 ft.lb	800–3600 in.lb	20 ft.lb	100 in.lb	2 ft.lb	14x18	28	23	607	564.5	25	1655

* recommended ratchet insert tool No 735/40HD

730NR Torque wrenches with permanently installed fine-tooth ratchet

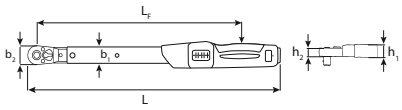
in sturdy plastic case (size 65 in steel case). Deviation of indication ± 4%.



Code	size					Fine scale	■ "	b_1 mm	b_2 mm	h_1 mm	h_2 mm	L mm	L_F mm	g	g with box
96 50 31 05	**5 FK** ✹	10–50 N m	7–37 ft.lb	5 N m	1 ft.lb	0.25 N m	3/8	28	33	23	24	364	280.5	973	1480
96 50 31 10	**10 FK** ✹	20–100 N m	15–75 ft.lb	10 N m	2.5 ft.lb	0.5 N m	1/2	28	33	23	24	364	336.5	1146	1658
96 50 31 20	**20 FK** ✹	40–200 N m	30–150 ft.lb	10 N m	5 ft.lb	1 N m	1/2	28	43	23	26	513.5	425	1583	2266
96 50 21 40	**40 FK**	80–400 N m	60–300 ft.lb	20 N m	10 ft.lb	2 N m	3/4	28	50	23	31.5	657	564.5	2122	2657
96 50 22 65	**65 FK-HD**	130–650 N m	100–480 ft.lb	50 N m	20 ft.lb	2.5 N m	3/4	30.6	58	25.6	36	944	848	3698	6188

730NR Torque wrenches with permanently installed QuickRelease ratchet

in sturdy plastic case (size 65 in steel case). Ratchet has Quick-Release safety lock. Deviation of indication ± 4%.



Code	size					Fine scale	■ "	b_1 mm	b_2 mm	h_1 mm	h_2 mm	L mm	L_F mm	g	g with box
96 50 21 05	**5QR FK**	10–50 N m	7–37 ft.lb	5 N m	1 ft.lb	0.25 N m	3/8	28	29	23	14.5	372.5	291	961	1386
96 50 21 10	**10QR FK**	20–100 N m	15–75 ft.lb	10 N m	2.5 ft.lb	0.5 N m	1/2	28	29	23	14.5	428.5	346.5	1129	1554
96 50 21 20	**20QR FK**	40–200 N m	30–150 ft.lb	10 N m	5 ft.lb	1 N m	1/2	28	41	23	18	526	438.5	1589	2014

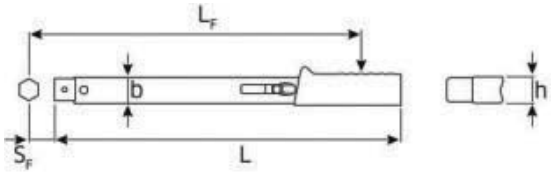
Service MANOSKOP® 730

- cut-out type
- mount for interchangeable insert/shell tools
- QuickRelease safety lock (sizes 5–65)
- rapid setting (sizes 2–65)
- dual stop signal
- twin scales N m/ft.lb and N m/in.lb (sizes 5–80)
- the measuring element is only under load while force is being applied, no need for manual reset to zero
- can be applied for either clockwise or anticlockwise tightening by turning the inserts over

196-203

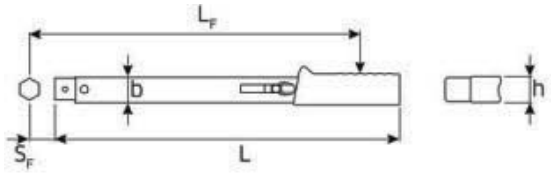
- any force applied to the tool after the "click" or applied in the opposite direction to the current function – e.g. forcible loosening of a jammed screw - does not act on the trigger mechanism and cannot cause damage to it.
- calibration using perfectControl calibrating unit No 7794 or calibration system No 7706. Adjustment without disassembly.
- with certificate
- display deviation value ± 4%

730 Basic wrenches with tool carrier for insert tools



730/2

Code	size			mm	b mm	h mm	L mm	L_F mm	S_F mm	g
50 18 00 02	**2**	4–20 N m	0.5 N m	9x12	27.5	23	178.5	174	17.5	315
50 18 00 04	**4**	8–40 N m	1 N m	9x12	27.5	23	222	218	17.5	395
50 58 00 01	**a/2-1**	17.5–87.5 in.lb	2.5 in.lb	9x12	27.5	23	178.5	174	17.5	315
50 58 00 02	**a/2**	30–175 in.lb	5 in.lb	9x12	27.5	23	178.5	174	17.5	315
50 58 00 04	**a/4**	70–350 in.lb	10 in.lb	9x12	27.5	23	222	218	17.5	395



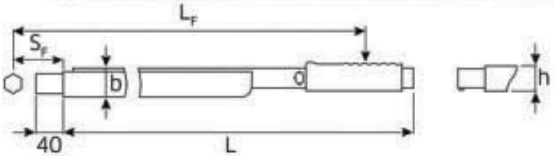
730/5

Code	size					mm	b mm	h mm	L mm	L_F mm	S_F mm	g
50 18 00 05	**5**	6–50 N m	5–36 ft.lb	2 N m	1 ft.lb	9x12	28	23	315	288	17.5	805
50 18 00 10	**10**	20–100 N m	15–72.5 ft.lb	2.5 N m	2.5 ft.lb	9x12	28	23	370	343	17.5	965
50 18 00 12	**12**	25–130 N m	20–95 ft.lb	2.5 N m	2.5 ft.lb	14x18	28	23	410	390	25	1100
50 18 00 20	**20**	40–200 N m	30–145 ft.lb	5 N m	5 ft.lb	14x18	28	23	455	435	25	1250
50 18 00 40	**40**	80–400 N m	60–300 ft.lb	10 N m	10 ft.lb	14x18	28	23	590	570	25	1880
50 18 00 65	**65***	130–650 N m	100–480 ft.lb	20 N m	20 ft.lb	14x18	30.6	25.6	875	855	25	3280
50 18 15 65	**II/65** ✹	130–650 N m	100–480 ft.lb	20 N m	20 ft.lb	22x28	30.6	25.6	897	907	55	3280
50 58 00 05	**a/5**	6–50 N m	50–440 in.lb	2 N m	10 in.lb	9x12	28	23	315	288	17.5	805
50 58 00 10	**a/10**	20–100 N m	180–880 in.lb	2.5 N m	20 in.lb	9x12	28	23	370	343	17.5	965
50 58 00 12	**a/12**	25–130 N m	225–1150 in.lb	2.5 N m	25 in.lb	14x18	28	23	410	390	25	1100
50 58 00 20	**a/20**	40–200 N m	350–1750 in.lb	5 N m	50 in.lb	14x18	28	23	455	435	25	1250

* recommended ratchet insert tool No 735/40HD

730 Basic wrench with tool carrier for shell tools

730/80



Code	size					mm	b mm	h mm	L mm	L_F mm	S_F mm	g
50 18 00 80	**80**	160–800 N m	120–600 ft.lb	20 N m	20 ft.lb	24.5x28	46	43	970	990	95	5377

Use shell adaptor No 7370/80 to make 14 x 18 mm insert tools fit.

Standard MANOSKOP® 720Nf

- cut-out type
- easy setting
- dual stop signal
- twin scales N m/ft.lb
- anticlockwise torquing thanks to swap-over square drive
- all the sensitive components are protected by the sturdy tubular steel housing in the U-shaped aluminium profile
- calibration using perfectControl calibrating unit No 7794 or calibration system No 7706. Adjustment without disassembly.
- with certificate
- display deviation value ± 4%

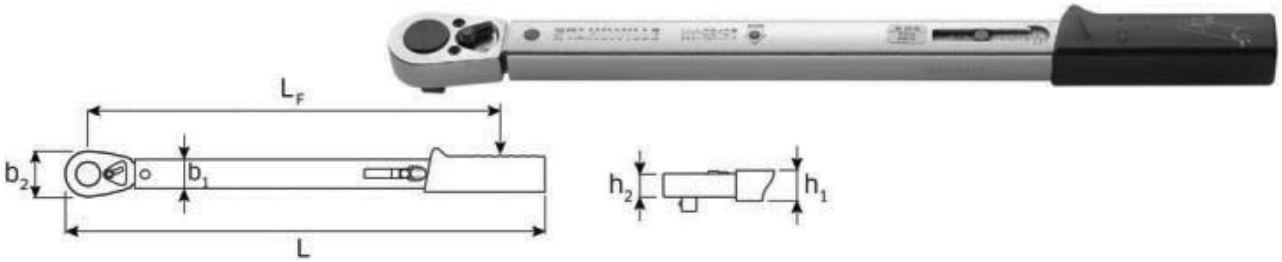
720Nf **Torque wrench with square drive**

Code	size					■ "	b mm	h mm	L mm	L_F mm	S_F mm	g
50 19 00 81	**80**	160–800 N m	120–600 ft.lb	20 N m	20 ft.lb	3/4	45	42	1034	938	0	6102

Standard MANOSKOP® 721

- cut-out type
- rapid setting
- dual stop signal
- twin scales N m/ft.lb
- the measuring element is only under load while force is being applied, no need for manual reset to zero
- any force applied to the tool after the “click” or applied in the opposite direction to the current function – e.g. forcible loosening of a jammed screw - does not act on the trigger mechanism and cannot cause damage to it.
- all the sensitive components are protected by the sturdy tubular steel housing
- calibration using perfectControl calibrating unit No 7794 or calibration system No 7706. Adjustment without disassembly.
- with certificate
- display deviation value ± 4%

721 **Torque wrenches with reversible ratchet**



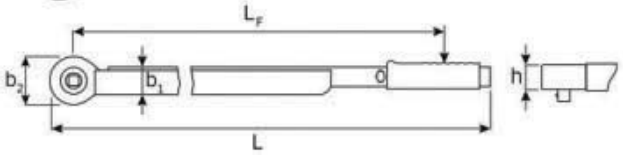
Code	size					■ "	b_1 mm	b_2 mm	h_1 mm	h_2 mm	L mm	L_F mm	g
50 20 00 05	**5**	6–50 N m	5–36 ft.lb	2 N m	1 ft.lb	3/8	28	27.5	23	14.5	352	293	900
50 20 00 15	**15**	30–150 N m	25–110 ft.lb	5 N m	5 ft.lb	1/2	28	41	23	18	452	387	1395
50 20 00 30	**30**	60–300 N m	50–220 ft.lb	10 N m	10 ft.lb	1/2	28	44	23	27.5	553	486	1720

size 30 with push through square drive for anticlockwise torquing (spare square drive, refer to page 204)

Standard MANOSKOP® 721Nf

- cut-out type
- easy setting
- dual stop signal
- twin scales N m/ft.lb
- anticlockwise torquing thanks to swap-over square drive
- all the sensitive components are protected by the sturdy tubular steel housing in the U-shaped aluminium profile
- calibration using perfectControl calibrating unit No 7794 or calibration system No 7706. Adjustment without disassembly.
- with certificate
- display deviation value ± 4%

721Nf Torque wrenches with ratchet



Code	size					■ "	b_1 mm	b_2 mm	h mm	L mm	L_F mm	g
50 20 00 81	**80**	160–800 N m	120–600 ft.lb	20 N m	20 ft.lb	3/4	46.5	76	42	1051	938	7222
96 50 20 01	**100**	200–1000 N m	150–725 ft.lb	25 N m	25 ft.lb	3/4	46.5	76	42	1504	1365	7005

7161 QuickRelease safety lock

prevents insert tools being swapped. The system is locked in place on the head of the torque wrench by means of a safety screw. Once the protection system has been fitted, it is possible to attach an insert tool but not to remove it because the QuickRelease unlock button itself is locked. After the safety screw has been removed, the torque wrench reverts to being a standard, versatile tool.
The safety screw can be fitted and removed using a TORX® screwdriver with a central bore in the tip (No 4656, Size T20, Code 46 56 00 20) or a BITS screwdriver insert with a central bore in the tip (No 1442, Size T20, Code 08 16 00 20).

Code	size	for torque wrenches No	g
54 10 00 70	**1**	714/1; 714/2; 714/4	4
54 10 00 71	**2**	712R/6; 713R/6; 714/6; 714/10; 730/10; 730a/10; 730N/10; 730Na/10; 730D/10	5
54 10 00 72	**3**	713R/20; 713R/40; 714/20; 714/40; 730/12; 730/20; 730/40; 730/65; 730a/12; 730a/20; 730N/12; 730N/20; 730N/40; 730N/65; 730Na/20; 730Na/40; 730D/20; 730D/40; 730D/65	11

for other torque wrenches on request.

7396 LED lighting

for torque wrenches
If light is poor, simply attach this LED lamp to illuminate the work site.
Included in the delivery is a 1.5 V micro battery.
Supplied without torque wrench.

Code	for torque wrenches No	g
54 01 00 04	712R/6; 713R/6; 713R/20; 713R/40; 714/6; 714/10; 714/20; 714/40; 721/5; 721/15; 721/30; 730/5; 730/10; 730/12; 730/20; 730/40; 730a/5; 730a/10; 730a/12; 730a/20; 730N/5; 730N/10; 730N/12; 730N/20; 730N/40; 730Na/5; 730Na/10; 730Na/20; 730Na/40; 730D/10; 730D/20; 730D/40	51

available from June 2014

Industrial MANOSKOP® 755

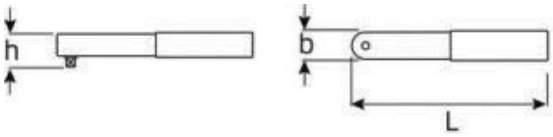
For work on production lines or series production. No setting scale; have to be set with a tester such as the STAHLWILLE No 7707 W tester or the No 7794, No 7706 calibration system.

- cut-out type
- mount for interchangeable insert tools
- dual stop signal
- particularly light and easy to handle
- handle and shank are made of square tubular steel
- any force applied to the tool after the “click” or applied in the opposite direction to the current function (up to the max. of the wrench's range) does not act on the trigger mechanism and cannot cause damage to it.
- anticlockwise torquing thanks to swap-over insert tools
- on request with preset cut-out value (surcharge 10%)
- display deviation value ± 4%

196-203

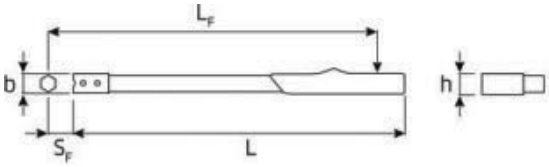
755R/1 Industrial MANOSKOP®

Torque wrench with built-in ratchet, irrespective of the point of application of force, dual stop signal and cut-out. Deviation of indication ± 4%.
Cut-out setting with aid of Setting Gauge.



Code			■ "	b mm	h mm	L mm	g
50 10 00 01	1.5–12.5 N m	1.0–9.0 ft.lb	1/4	22	18	173.5	335

755 Basic wrenches with tool carrier for insert tool



Code	size			mm	b mm	h mm	L mm	L_F mm	S_F mm	g
50 01 00 04	**4**	4–40 N m	4–30 ft.lb	9x12	22	18	201	172	17.5	522
50 01 00 10	**10**	20–100 N m	15–74 ft.lb	9x12	28	24	318	289	17.5	635
50 01 00 20	**20**	40–200 N m	30–147 ft.lb	14x18	28	24	457	435	25	1060
50 01 00 30	**30**	60–300 N m	40–220 ft.lb	14x18	28	24	609	587	25	1210

Plastic case, empty

for safe storage and transport of torque wrenches (please order inlays separately). Supplied without torque wrench.

Code	No	for torque wrenches No	L mm	g
81 37 00 02	**7301**	712R/6; 713R/6; 714/1; 714/2; 714/4; 714/6; 714/10; 721/5; 721/15; 730/5; 730/10; 730/12; 730/20; 730a/5; 730a/10; 730a/12; 730a/20; 730N/5; 730N/10; 730N/12; 730N/20; 730Na/5; 730Na/10; 730Na/20; 730D/10	550	425
81 37 00 03	**7302**	713R/20; 714/20; 721/30; 730/40; 730N/40; 730Na/40; 730D/20	680	535

Inlays for plastic case

Code	for torque wrenches No	g
83 07 10 04	712R/6; 713R/6; 721/5; 721/15; 730/5; 730/10; 730/12; 730/20; 730a/5; 730a/10; 730a/12; 730a/20; 730N/5; 730N/10; 730N/12; 730N/20; 730Na/5; 730Na/10; 730Na/20; 730D/10	88
83 07 10 02	713R/20; 721/30; 730/40; 730N/40; 730Na/40; 730D/20	113

1299 BITS

for inside hexagon screws, for operating the adjusting screws on torque wrenches No 720, 721, 730 and 730N.

Code	mm	outside ⬢	"	L mm	g	
08 09 00 02	2	C 6.3	1/4	34	4	10

outside ⬢ DIN 3126/ISO 1173

Indicating torque wrenches

Electronic angle-controlled torque wrench Sensotork® 713

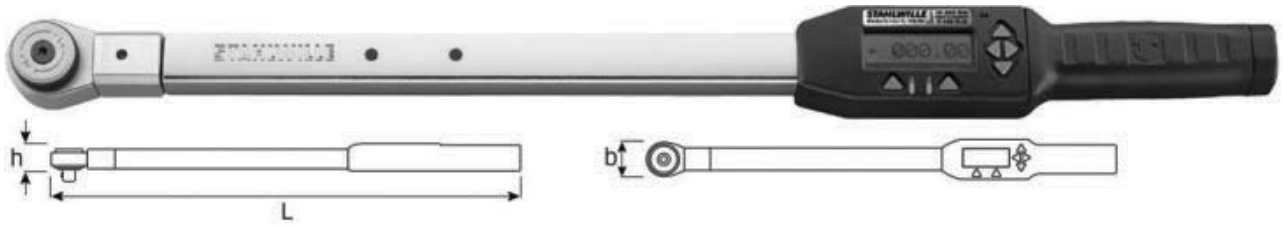
- simple, flexible operation thanks to operator guidance on large-format display
- very broad measuring range (5% to 100% of rated value)
- supplied with insert tool reversible ratchet, more insert tools
- QuickRelease safety lock
- for clockwise and anticlockwise torquing
- measurements independent of the point of application of force (sizes 6 and 20)
- units of measurement: N m, ft.lb, in.lb
- advance warning points programmable for visual, tactile and acoustic signals
- torque and angle are simultaneously visible
- convenient angle measurement across a very wide angle range without a reference arm
- insert tool lengths can be individually set
- maintenance friendly due to easy adjustment and automatic reminder of next calibration date

196-203

- repeated joints can be collated to form a single menu-guided sequence
- individual identification markings possible
- password protection to prevent inadvertent changes and make the tool tamper-proof
- meets requirements of DKD-R 3-7, Class 2
- with certificate
- in sturdy plastic case (size 40 in tough steel case)
- supplied with three 1.5 V AA batteries. AA/LR6, 1.2 V NiMH rechargeable cells may also be used
- fully automated calibration (torque) using perfectControl calibrating unit No 7794-2. Adjustment without disassembly.
- registered design
- display deviation value for angle ± 1°
- display deviation value ± 1%

713R **Electronic angle-controlled torque wrenches Sensotork®**

QR



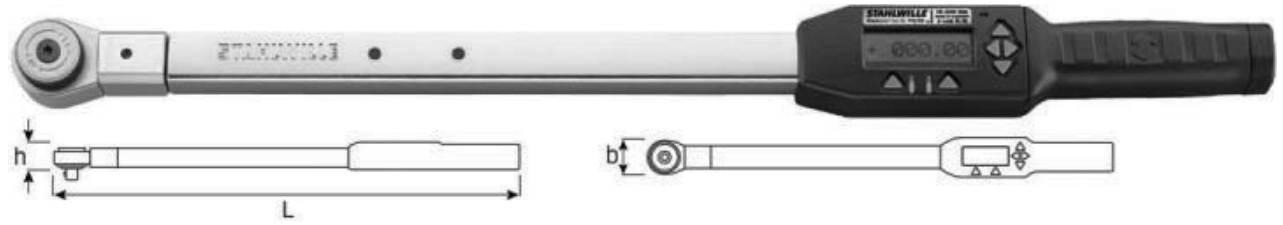
Code	size			■ "	mm	b mm	h mm	L mm	g	g with box
96 50 16 06	**6**	3–60 N m	2.5–44 ft.lb	3/8	9x12	50	33.5	378	856	1500
96 50 16 20	**20**	10–200 N m	7–148 ft.lb	1/2	14x18	50	33.5	608	1552	2430
96 50 16 40	**40**	20–400 N m	15–296 ft.lb	3/4	14x18	50	33.5	838	2332	5555

Electronic torque wrench Sensotork® 712

712R/6 **Electronic torque wrench Sensotork®**

QR

Registered design, electronic torque wrench with option of attaching interchangeable insert tools, same design as No 713 but without angle function.



Code			■ "	mm	b mm	h mm	L mm	g	g with box
96 50 15 06	3–60 N m	2.5–44 ft.lb	3/8	9x12	50	33.5	378	856	1500

Accessories for electronic angle-controlled torque wrench Sensotork® No 713 and electronic torque wrench Sensotork® No 712

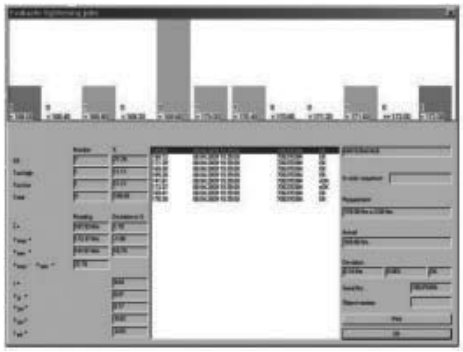
7759-1 USB adaptor, jack cable and software SENSOMASTER for No 712R, 713R

for documenting and managing readings on a PC and carrying out statistical analyses.

- Read out stored wrench data and joint readings: Joint identifier, Tool serial number, Target torque or target angle, Torque level at which the tool cuts out, Tightening torque or angle reached, Tolerances, Joint evaluation
- Storage of joint data in a database
- Delete or print highlighted joints from the database
- Export displayed joint data to a CSV file (compatible with Excel)
- 13 languages
- User management
- Define new PIN
- Delete joint data stored in wrench

System requirements:

- PC
- Microsoft Windows 98 SE or compatible operating system with USB support
- USB connection
- Installed ODBC driver for Access data



Code	L m	g
96 58 36 25	1.5	137

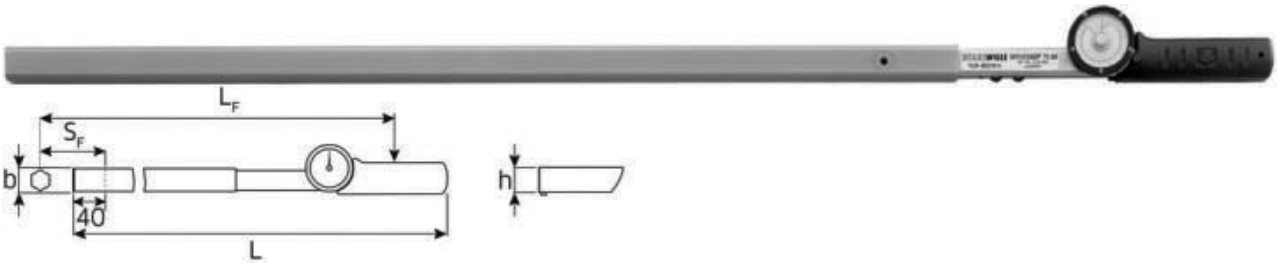
5

MANOSKOP® 71

196-203

- indicating type
- mount for interchangeable shell tools
- all 14 x 18 mm insert tools can also be used with insert tool adaptor No 7370/80 (max. 650 N m)
- trailing pointer dial
- twin scales N m/ft.lb
- scale is made of luminescent light yellow special film enabling clear readings even in poor light conditions
- handle with integrated force compensator
- measuring element is a bending plate housed in the handle
- with overload protection
- can be applied for either clockwise or anticlockwise tightening by turning the wrench over
- calibration using perfectControl calibrating unit No 7794 No 7794 or calibration system No 7706. Adjustment without disassembly.
- with certificate
- display deviation value ± 4%

71/80 MANOSKOP® 71 with integrated force compensator

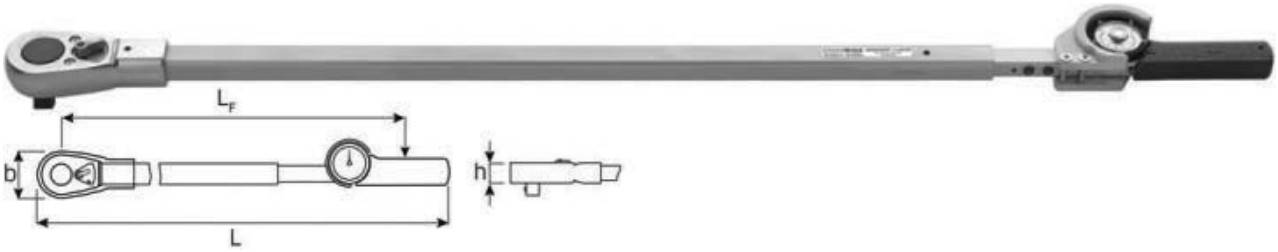


Code					mm	b mm	h mm	L mm	L_F mm	S_F mm	g
50 03 00 80	160–800 N m	120–600 ft.lb	10 N m	10 ft.lb	24.5x28	28	24	1048	1050	95	2360

MANOSKOP® 71 with permanently installed reversible ratchet

- indicating type
- trailing pointer dial
- twin scales N m/ft.lb
- scale is made of luminescent light yellow special film enabling clear readings even in poor light conditions
- additional protection for the gauge by the protective ring
- not for anticlockwise measurement
- calibration using perfectControl calibrating unit No 7794 or calibration system No 7706. Adjustment without disassembly.
- with certificate
- display deviation value ± 4%

71aR/80 **MANOSKOP® 71 with integrated force compensator**



Code					■ "	b mm	h mm	L mm	L_F mm	g
50 45 00 80	100–600 ft.lb	160–800 N m	10 ft.lb	10 N m	3/4	70	30	1152	1060	4280

Friction gauge

- indicating type
- permanently installed square drive
- trailing pointer dial
- no “needle wobble” during measurements
- lighter construction due to use of aluminium
- with certificate
- display deviation value ± 4%

73Nm/15 **Friction gauge**

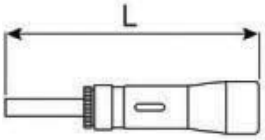
Code			■ "	b mm	h mm	L mm	L_F mm	S_F mm	g
50 24 00 15	2–15 N m	0.5 N m	1/2	72	50	298.5	250	0	775

Torque screwdriver

TORSIOMAX 775

- cut-out type
- for torque-controlled bolt tightening in the cN m and in.lb ranges
- for one-off or production runs
- measuring element is a screw compression spring
- anticlockwise and clockwise tightening
- with 1/4" internal hex drive (F 6.3 DIN 3126/ISO1173)
- infinitely variable via micrometer scale (twist scale)
- disengaging clutch coupling prevents the preset value being exceeded
- the shape of the handle and its surface texture ensure safe and accurate transmission of torque
- insert tools: For all 1/4" hex E 6.3, Phillips-head screws, POZIDRIV / SUPADRIV®, straight-slot, TORX®, hex BITS (see pp. 167, 168). For very small joints, BITS with a 4 mm hex drive and an adapter No 3115/2 for BITS screwdriver inserts, Type C4, and external hex 1/4" (E 6.3 DIN 3126/ISO 1173) are required (refer to pages 162, 165).
- with certificate
- display deviation value ± 6%

775 **Torque screwdriver TORSIOMAX**



Code	size			inside O	L mm	g
51 06 00 03	**3[1])**	2–30 cN m	0.2 cN m	F 6.3	105	99
51 06 00 12	**12[2])**	20–120 cN m	1 cN m	F 6.3	157	192
51 06 00 30	**30[2])**	40–300 cN m	1 cN m	F 6.3	160	214
51 06 00 50	**50[2])**	100–500 cN m	2.5 cN m	F 6.3	205	436
51 06 01 00	**100[3])**	400–1000 cN m	5 cN m	F 6.3	235	762
51 46 00 03	**a/3[1])**	0.2–3 in.lb	0.02 in.lb	F 6.3	105	99
51 46 00 12	**a/12[2])**	2–12 in.lb	0.1 in.lb	F 6.3	157	192
51 46 00 50	**a/50[2])**	10–50 in.lb	0.25 in.lb	F 6.3	205	436

[1]) with a swivelling handle-end to improve tool control; and with a clamping screw for locking the preset.
[2]) with an additional locking mechanism to prevent the selected torque being inadvertently adjusted.
[3]) with screw-on handles for increasing the force applied for large torques.

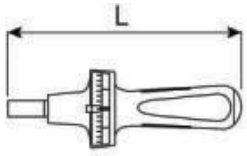
Note!

Torque tightening tools are measuring instruments.
They must be regularly calibrated with suitable instruments and adjusted accordingly (see DIN EN ISO 6789, 5.3 Recalibrating).

TORSIOMETER 760

- indicating type
- the measuring element is a torsional leaf spring
- clockwise tightening (with trailing pointer) and anticlockwise tightening
- with 1/4" internal hex drive (F 6.3 DIN 3126)
- comparative scale in in.lb and cursor
- inserts and adaptors with external hex E 6.3 (1/4") DIN 3126/ISO 1173 are securely held and firmly controlled in the mounting shaft (for BITS screwdriver inserts, refer to pages 167, 168).
- to attach 1/4" sockets, please order adaptor No 3115 (refer to page 166)
- with certificate
- display deviation value ± 4%

760 **Torque screwdrivers TORSIOMETER**

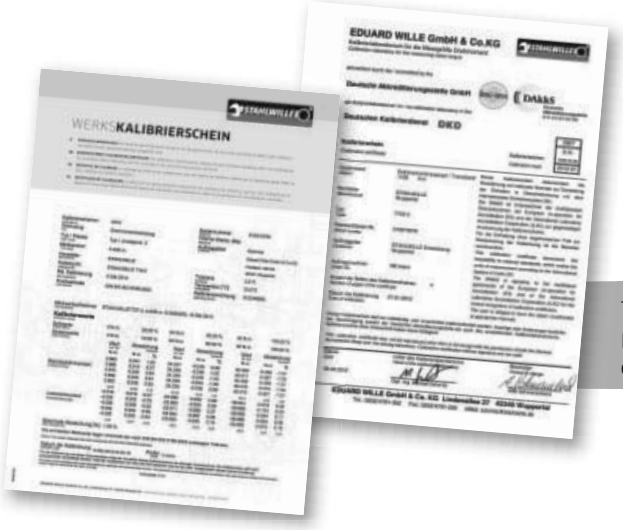


Code	size				inside	L mm	g
51 04 00 07	**7.5**	15–75 cN m	1.5–6.5 in.lb	2.5 cN m	F 6.3	185	225
51 04 00 15	**15**	30–150 cN m	3–13 in.lb	5 cN m	F 6.3	185	225
51 04 00 30	**30**	60–300 cN m	6–26 in.lb	10 cN m	F 6.3	185	230
51 04 00 60	**60**	120–600 cN m	12–52 in.lb	20 cN m	F 6.3	185	230

STAHLWILLE is an accredited calibrating laboratory.

Controlled tightening is a must in terms of safety and the lifetimes of the screws and bolts.STAHLWILLE has been awarded accreditation as a calibrating laboratory for torque by the German Accreditation Body (DAkkS) because of the Company's skills in the field of torque controlled tightening.

- Included in the price of calibration of STAHLWILLE products are the costs of any adjustment required and a second calibration operation.
- In addition, the STAHLWILLE calibration service provides complete monitoring, documentation archiving and follow-up timing for torque wrenches and testers.
- Additional information on these services is available on request.



The STAHLWILLE calibration service is in a position to offer both the usual **works calibration certificate** and the **DAkkS certificate.**

Which insert tool for which torque wrench?

Size	Size	mm	725QR 4	725QR 5	725QR 10	725QR 20	725B 4/5	725L 5	725 4	735 5	735 10	735 20	735 40	735 40HD	735 80	735 100	734 4	734 5	734 10	734 20	734 40	734 80	734 100
1	–	9x12	o	o	o		o	o	o	o	o						o	o	o				
2	a/2	9x12	o	o	o		o	o	o	o	o						o	o	o				
4	a/4	9x12	o	o	o		o	o	o	o	o						o	o	o				
5	a/5	9x12	o	o	o		o	o	o	o	o						o	o	o				
6	–	9x12	o	o	o		o	o	o	o	o						o	o	o				
10	a/10	9x12		o	o			o		o	o							o	o				
12	a/12	14x18				o						o	o	o						o	o		
20	a/20	14x18				o						o	o	o						o	o		
30	–	14x18				o							o	o						o	o		
40	a/40	14x18											o	o							o		
65	–	14x18												o							o		
II/65	–	22x28														o							o
80	–	24.5x28													o							o	
80	–	22x28														o							o
100	–	22x28														o							o

Size	Size	mm	734F 4/5	734L 5	731 10	731 40	731 80	731 100	732 10	732 40	732 80	732 100	732G 10	732TX 10	732TX 40	733 10	736 10	736 40	737 10	737 40	737 100
1	–	9x12	o	o	o				o				o	o		o	o		o		
2	a/2	9x12	o	o	o				o				o	o		o	o		o		
4	a/4	9x12	o	o	o				o				o	o		o	o		o		
5	a/5	9x12	o	o	o				o				o	o		o	o		o		
6	–	9x12	o	o	o				o				o	o		o	o		o		
10	a/10	9x12	o	o	o				o				o	o		o	o		o		
12	a/12	14x18				o				o					o			o		o	
20	a/20	14x18				o				o					o			o		o	
30	–	14x18				o				o					o			o		o	
40	a/40	14x18				o				o					o			o		o	
65	–	14x18				o				o					o			o		o	
II/65	–	22x28						o				o									o
80	–	24.5x28					o				o										
80	–	22x28						o				o									o
100	–	22x28						o				o									o

714 **Electromechanical torque and angle-controlled wrench MANOSKOP®**
Cut-out, indicating

713R **Electronic angle-controlled Torque Wrench Sensotork®**
Indicating

730D **Service/Industrial MANOSKOP®**
Cut-out, indicating

730N **Service MANOSKOP®**
Cut-out

730 **Service MANOSKOP®**
Cut-out

755 **Industrial MANOSKOP®**
Cut-out

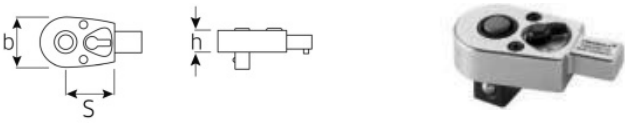
71 **Torque Wrench MANOSKOP®**
Indicating

Insert/shell tools for torque wrenches

Output square drive ■ in accordance with DIN 3120. Long-term loading of the input and output square drive is in accordance with DIN EN ISO 6789:2003. This limit must not be exceeded if larger torque wrenches and tool holders are used.

725QR QuickRelease ratchet insert tool

reversible, with QuickRelease safety lock, size 4: 22 teeth, sizes 5 and 10: 30 teeth, size 20: 36 teeth.



Code	size	■ "	mm	b mm	h mm	S mm	M N m	g
58 25 30 04	**4**	1/4	9x12	22	14.5	17.5	40	60
58 25 30 05	**5**	3/8	9x12	29	14.5	28*	100	130
58 25 30 10	**10**	1/2	9x12	29	14.5	28*	100	141
58 25 30 20	**20**	1/2	14x18	41	18	38.5*	200	325

* Caution! Modified settings on torque wrench (refer to note on page 207).

725B Bit ratchet insert tool

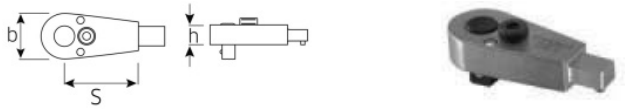
reversible, with inside hexagon, 1/4" or 5/16", DIN 3126/ISO 1173 D 6.3 or D8, for direct acceptance of bits 1/4" or 5/16" outside hexagon C 6.3 (size 4: 22 teeth, size 5: 30 teeth).
Internal hex drive with a collar-thrust spring. Bits are easy to insert, lock securely in position and can be removed just as easily; even hex bits with a wide groove (Type E, DIN 3126/ISO 1173). Supplied without bits.

Code	size	inside ○ "	mm	b mm	h mm	S mm	g
58 25 50 04	**4**	1/4	9x12	22	14	17.5	54
58 25 50 05	**5**	5/16	9x12	29	14.5	28*	117

* Caution! Modified settings on torque wrench (refer to note on page 207)

725L/5 Ratchet insert tool

reversible, 30 teeth.
Caution! Modified settings on torque wrench (refer to note on p. 207).
This ratchet insert tool has the same extension length as ring insert tool No 732G/10 (see p. 200) and square drive insert tool No 734L/5 (see p. 198).



Code	■ "	mm	b mm	h mm	S mm	g
58 15 10 05	3/8	9x12	27.5	14.5	45	164

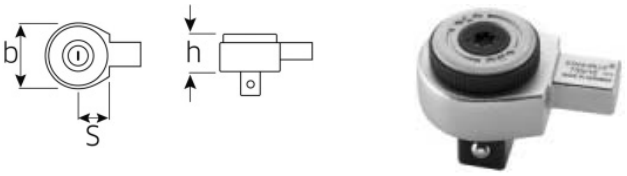
725/4 Ratchet insert tool

reversible, 22 teeth.

Code	■ "	mm	b mm	h mm	S mm	M N m	g
58 25 40 04	1/4	9x12	22	14.5	17.5	40	62

735 Ratchet insert tools, fine tooth

reversible, 60 teeth.

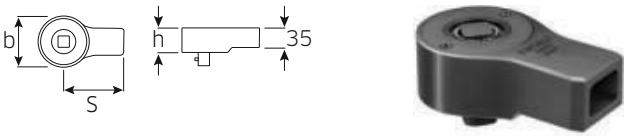


Code	size	■ "	mm	b mm	h mm	S mm	M N m	g
58 25 00 05	**5**	3/8	9x12	33	24	17.5	100	155
58 25 00 10	**10**	1/2	9x12	33	24	17.5	100	147
58 25 00 20	**20**	1/2	14x18	43	26	25	300	302
58 25 00 40	**40**	3/4	14x18	50	31.5	25	400	510
58 25 00 65	**40HD**	3/4	14x18	58	36	30*	650	737

* Caution! Modified settings on torque wrench (refer to note on page 207).

735/80 Ratchet shell tool

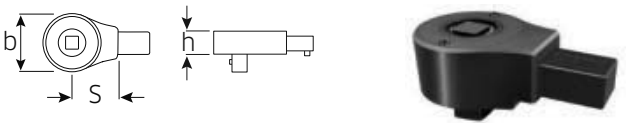
with push through square drive, 30 teeth.



Code	■ "	mm	b mm	h mm	S mm	g
58 25 00 80	3/4	24.5x28	76	43	95	2000

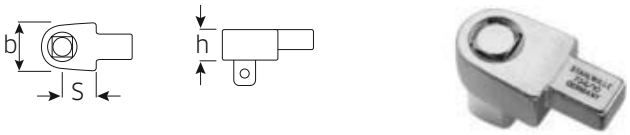
735/100 Ratchet insert tool

with push through square drive, 30 teeth.



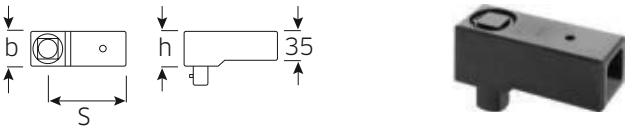
Code	■ "	mm	b mm	h mm	S mm	g
58 25 01 00	3/4	22x28	76	42	55	1915

734 Square drive insert tools



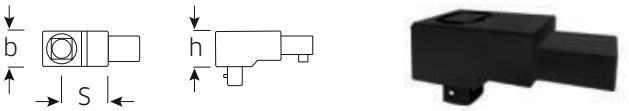
Code	size	■ "	mm	b mm	h mm	S mm	M N m	g
58 24 00 04	**4**	1/4	9x12	20	14	17.5	40	71
58 24 00 05	**5**	3/8	9x12	20	14	17.5	80	76
58 24 00 10	**10**	1/2	9x12	20	14	17.5	100	82
58 24 00 20	**20**	1/2	14x18	27	18	25	300	203
58 24 00 40	**40**	3/4	14x18	40	25	25	650	396

734/80 Square drive shell tool



Code	■ "	mm	b mm	h mm	S mm	g
58 24 00 80	3/4	24.5x28	42	42	95	1200

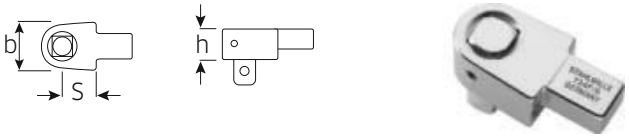
734/100 Square drive insert tool



Code	■ "	mm	b mm	h mm	S mm	g
58 24 01 00	3/4	22x28	43	42	55	1171

734F Square drive insert tools

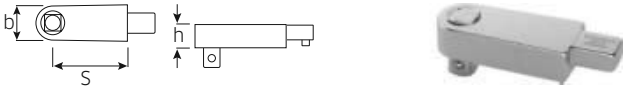
with permanently attached, captive square drive.



Code	size	■ "	mm	b mm	h mm	S mm	g
58 24 10 04	**4**	1/4	9x12	22	14	17.5	72
58 24 10 05	**5**	3/8	9x12	22	14	17.5	75

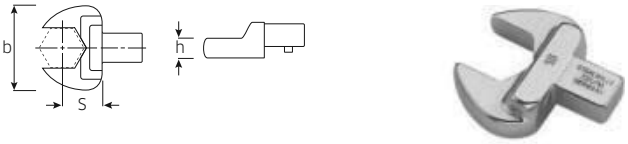
734L/5 Square drive insert tool

Caution! Modified settings on torque wrench (refer to note on p. 207). This square-drive insert tool has the same extension length as ring insert tool No 732G/10 (see p. 200) and ratchet insert tool No 725L/5 (see p. 197).



Code	■ "	mm	b mm	h mm	S mm	g
58 24 20 05	3/8	9x12	20	14	45	141

731/10 Open ended insert tools



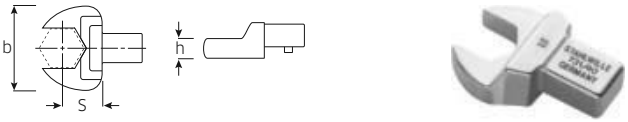
Code	mm	mm	b mm	h mm	S mm	g
58 21 10 07	**7**	9x12	22	5	17.5	40
58 21 10 08	**8**	9x12	22	5	17.5	39
58 21 10 09	**9**	9x12	26	5.5	17.5	38
58 21 10 10	**10**	9x12	26	5.5	17.5	42
58 21 10 11	**11**	9x12	26	5.5	17.5	41
58 21 10 12	**12 [1])**	9x12	30	7	17.5	43
58 21 10 13	**13**	9x12	30	7	17.5	48
58 21 10 14	**14**	9x12	35	8	17.5	52
58 21 10 15	**15**	9x12	35	8	17.5	51
58 21 10 16	**16**	9x12	38	8.5	17.5	58
58 21 10 17	**17**	9x12	38	8.5	17.5	60
58 21 10 18	**18**	9x12	42	9	20*	71
58 21 10 19	**19**	9x12	42	9	20*	74

[1]) For flare nuts of hydraulic pipes on French vehicles

731a/10 Open ended insert tools

Code	"	mm	b mm	h mm	S mm	g
58 61 10 16	**1/4**	9x12	22	5	17.5	36
58 61 10 20	**5/16**	9x12	22	5	17.5	53
58 61 10 24	**3/8**	9x12	26	5.5	17.5	38
58 61 10 28	**7/16**	9x12	26	5.5	17.5	37
58 61 10 32	**1/2**	9x12	30	7	17.5	44
58 61 10 34	**9/16**	9x12	35	8	17.5	49
58 61 10 36	**5/8**	9x12	38	8.5	17.5	64
58 61 10 38	**11/16**	9x12	42	9	20*	76
58 61 10 40	**3/4**	9x12	42	9	20*	73

731/40 Open ended insert tools



Code	mm	mm	b mm	h mm	S mm	g
58 21 40 13	**13**	14x18	30	7	25	128
58 21 40 14	**14**	14x18	35	8	25	129
58 21 40 15	**15**	14x18	35	8	25	132
58 21 40 16	**16**	14x18	38	9	25	140
58 21 40 17	**17**	14x18	38	9	25	136
58 21 40 18	**18**	14x18	42	10	25	147
58 21 40 19	**19**	14x18	42	10	25	145
58 21 40 21	**21**	14x18	50	11	25	171
58 21 40 22	**22**	14x18	50	11	25	165
58 21 40 24	**24**	14x18	53	12	25	167
58 21 40 25	**25**	14x18	53	12	25	170
58 21 40 27	**27**	14x18	60	13	30*	219
58 21 40 30	**30**	14x18	66	14	30*	245
58 21 40 32	**32**	14x18	66	14	32.5*	246
58 21 40 34	**34**	14x18	66	14	32.5*	239
58 21 40 36	**36**	14x18	74	15	32.5*	275
58 21 40 38	**38**	14x18	74	15	32.5*	265
58 21 40 41	**41**	14x18	82	15	36.5*	307

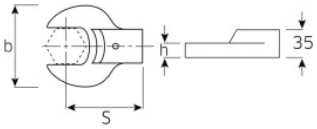
* Caution! Modified settings on torque wrench (refer to note on page 207)

731a/40 Open ended insert tools

Code	"	mm	b mm	h mm	S mm	g
58 61 40 28	7/16	14x18	30	7	25	127
58 61 40 32	1/2	14x18	30	7	25	125
58 61 40 34	9/16	14x18	35	8	25	129
58 61 40 36	5/8	14x18	38	9	25	136
58 61 40 38	11/16	14x18	42	10	25	148
58 61 40 40	3/4	14x18	42	10	25	144
58 61 40 42	13/16	14x18	50	11	25	171
58 61 40 44	7/8	14x18	50	11	25	165
58 61 40 46	15/16	14x18	53	12	25	177
58 61 40 48	1	14x18	60	13	30*	224
58 61 40 52	1 1/8	14x18	66	14	30*	258

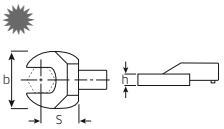
* Caution! Modified settings on torque wrench (refer to note on page 207)

731/80 Open ended shell tools



Code	mm	mm	b mm	h mm	S mm	g
58 21 80 24	24	24.5x28	50	13	95	601
58 21 80 27	27	24.5x28	56	14	95	620
58 21 80 30	30	24.5x28	63	15	95	655
58 21 80 32	32	24.5x28	67	15	95	670
58 21 80 34	34	24.5x28	72	15	95	699
58 21 80 36	36	24.5x28	74	15	95	740
58 21 80 41	41	24.5x28	84	16	95	810
58 21 80 46	46	24.5x28	94	17	95	867
58 21 80 50	50	24.5x28	104	18	95	1010
58 21 80 55	55	24.5x28	114	19	95	1150
58 21 80 60	60	24.5x28	124	20	95	1330

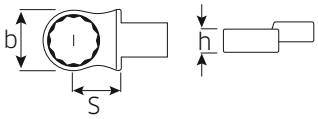
731/100 Open ended insert tools



Code	mm	mm	b mm	h mm	S mm	g
58 21 10 24	24	22x28	50	13	55	628
58 21 10 27	27	22x28	56	14	55	648
58 21 10 30	30	22x28	63	15	55	695
58 21 10 32	32	22x28	67	15	55	713
58 21 10 34	34	22x28	72	15	55	739
58 21 10 36	36	22x28	74	15	55	727
58 21 10 41	41	22x28	84	16	55	902
58 21 10 46	46	22x28	94	17	55	952
58 21 10 50	50	22x28	104	18	55	1074
58 21 10 55	55	22x28	114	19	55	1174
58 21 10 60	60	22x28	124	20	55	1230

732/10 Ring insert tools

AS-drive



Code	mm	mm	b mm	h mm	S mm	g
58 22 10 07	7	9x12	13	8	17.5	37
58 22 10 08	8	9x12	14.2	8	17.5	40
58 22 10 10	10	9x12	17.2	9	17.5	44
58 22 10 11	11	9x12	18.5	9	17.5	41
58 22 10 12	12	9x12	20.5	11	17.5	49
58 22 10 13	13	9x12	21.5	11	17.5	55
58 22 10 14	14	9x12	22.5	11	17.5	52
58 22 10 15	15	9x12	24.5	12	17.5	52
58 22 10 16	16	9x12	26	12	17.5	54
58 22 10 17	17	9x12	27	13	17.5	59
58 22 10 18	18	9x12	28	13	17.5	56
58 22 10 19	19	9x12	30.5	13	17.5	65
58 22 10 21	21	9x12	33	15	17.5	71
58 22 10 22	22	9x12	34.5	15	17.5	74

732a/10 Ring insert tools

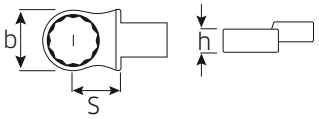
AS-drive

Code	"	mm	b mm	h mm	S mm	g
58 62 10 16	1/4	9x12	13	8	17.5	36
58 62 10 20	5/16	9x12	14.2	8	17.5	37
58 62 10 24	3/8 [1])	9x12	17.2	9	17.5	37
58 62 10 28	7/16	9x12	18.5	9	17.5	40
58 62 10 32	1/2	9x12	21.5	11	17.5	53
58 62 10 34	9/16	9x12	22.5	11	17.5	52
58 62 10 36	5/8	9x12	26	12	17.5	54
58 62 10 38	11/16	9x12	28	13	17.5	58
58 62 10 40	3/4	9x12	30.5	13	17.5	58
58 62 10 42	13/16	9x12	33	15	17.5	68
58 62 10 44	7/8	9x12	34.5	15	17.5	69

[1]) For Volvo aero-engines, types "JAS"

732/40 Ring insert tools

AS-drive



Code	mm	mm	b mm	h mm	S mm	g
58 22 40 13	**13**	14x18	22.5	11	25	130
58 22 40 14	**14**	14x18	23	11	25	123
58 22 40 15	**15**	14x18	24	11	25	128
58 22 40 16	**16**	14x18	25.5	12	25	133
58 22 40 17	**17**	14x18	27	12	25	135
58 22 40 18	**18**	14x18	29	13	25	134
58 22 40 19	**19**	14x18	30.5	13	25	138
58 22 40 21	**21**	14x18	33	15	25	144
58 22 40 22	**22**	14x18	34.5	15	25	145
58 22 40 24	**24**	14x18	37.5	15	25	153
58 22 40 27	**27**	14x18	42.5	17	25	162
58 22 40 28	**28**	14x18	45.5	19	25	175
58 22 40 30	**30**	14x18	46	19	25	182
58 22 40 32	**32**	14x18	47.5	19	25	181
58 22 40 34	**34**	14x18	52	19	28*	210
58 22 40 36	**36**	14x18	54	19	28*	203
58 22 40 41	**41**	14x18	60	20	30*	240

* Caution! Modified settings on torque wrench (refer to note on page 207).

732a/40 Ring insert tools

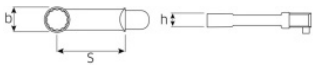
AS-drive

Code	"	mm	b mm	h mm	S mm	g
58 62 40 32	**1/2**	14x18	22.5	11	25	122
58 62 40 34	**9/16**	14x18	23	11	25	122
58 62 40 36	**5/8**	14x18	25.5	12	25	134
58 62 40 38	**11/16**	14x18	29	13	25	132
58 62 40 40	**3/4**	14x18	30.5	13	25	138
58 62 40 42	**13/16**	14x18	33	15	25	142
58 62 40 44	**7/8**	14x18	34.5	15	25	147
58 62 40 46	**15/16**	14x18	37.5	15	25	151
58 62 40 48	**1**	14x18	41	17	25	160

732G/10 Ring insert tools

AS-drive HPQ

Caution! Modified settings on torque wrench (refer to note on p. 207). This insert tool has the same extension length as insert tool No 725L/5 (see p. 197) and square-drive insert tool No 734L/5 (see p. 198); HPQ® high performance steel, gunmetal finish.



Code	mm	mm	b mm	h mm	S mm	g
58 62 00 07	**7**	9x12	11.5	6	45	31
58 62 00 08	**8**	9x12	12.4	6	45	33
58 62 00 09	**9**	9x12	14	8	45	40
58 62 00 10	**10**	9x12	15.6	8	45	44
58 62 00 13	**13**	9x12	19.3	9.2	45	60

732aG/10 Ring insert tools

AS-drive HPQ

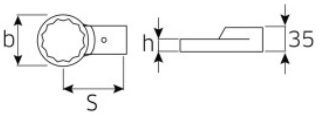
Caution! Modified settings on torque wrench (refer to note on p. 207). This insert tool has the same extension length as insert tool No 725L/5 (see p. 197) and square-drive insert tool No 734L/5 (see p. 198); HPQ® high performance steel, gunmetal finish.

Code	"	mm	b mm	h mm	S mm	g
58 62 12 16	**1/4**	9x12	10.4	6	45	28
58 62 12 20	**5/16**	9x12	12.4	6	45	31
58 62 12 24	**3/8**	9x12	14.9	8	45	42
58 62 12 28	**7/16**	9x12	17	8	45	43
58 62 12 32	**1/2**	9x12	19	9.2	45	58
58 62 12 34	**9/16**	9x12	21	9.2	45	58
58 62 12 36	**5/8**	9x12	23	12	45	74

for assembling and dismantling aero-engines.

732/80 Ring shell tools

AS-drive



Code	mm	mm	b mm	h mm	S mm	g
58 22 80 24	**24**	24.5x28	36	15	95	605
58 22 80 27	**27**	24.5x28	40.5	15	95	610
58 22 80 30	**30**	24.5x28	46	16	95	630
58 22 80 32	**32**	24.5x28	49	16	95	635
58 22 80 34	**34**	24.5x28	52	17	95	650
58 22 80 36	**36**	24.5x28	54	17	95	650
58 22 80 41	**41**	24.5x28	61	18	95	675
58 22 80 46	**46**	24.5x28	66	19	95	720
58 22 80 50	**50**	24.5x28	75	20	95	803
58 22 80 55	**55**	24.5x28	84	21	95	889
58 22 80 60	**60**	24.5x28	93	22	95	995

732a/80 Ring shell tools

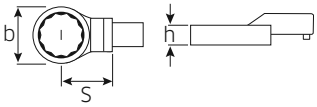
AS-drive

Code	"	mm	b mm	h mm	S mm	g
58 62 80 46	**15/16** [1]	24.5x28	36	14	95	604
58 62 80 50	**1 1/16** [1]	24.5x28	40.5	14	95	608

[1]) for jet engine pins (Airbus A320/A321)

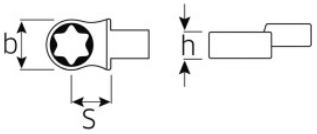
732/100 Ring insert tools

AS-drive



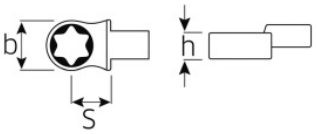
Code	mm	mm	b mm	h mm	S mm	g
58 22 10 24	**24**	22x28	43	15	55	629
58 22 10 27	**27**	22x28	43	15	55	619
58 22 10 30	**30**	22x28	46	16	55	632
58 22 10 32	**32**	22x28	49	16	55	625
58 22 10 34	**34**	22x28	52	17	55	638
58 22 10 36	**36**	22x28	54	17	55	631
58 22 10 41	**41**	22x28	61	18	55	642
58 22 10 46	**46**	22x28	66	19	55	640
58 22 10 50	**50**	22x28	75	20	55	713
58 22 10 55	**55**	22x28	84	21	55	791
58 22 10 60	**60**	22x28	93	22	55	885

732TX/10 TORX® insert tools



Code	size	mm	b mm	h mm	S mm	g
58 29 10 06	**E6**	9x12	13	8	17.5	40
58 29 10 08	**E8**	9x12	14.2	8	17.5	45
58 29 10 10	**E10**	9x12	17.2	9	17.5	45
58 29 10 12	**E12**	9x12	18.5	9	17.5	50
58 29 10 14	**E14**	9x12	21.5	11	17.5	60

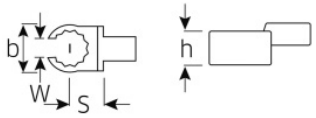
732TX/40 TORX® insert tools



Code	size	mm	b mm	h mm	S mm	g
58 29 40 14	**E14**	14x18	22.5	11	25	130
58 29 40 18	**E18**	14x18	24	11	25	135
58 29 40 20	**E20**	14x18	29	13	25	150
58 29 40 24	**E24**	14x18	30.5	13	25	150

733/10 Open ring insert tools

AS-drive



Code	mm	mm	b mm	h mm	W mm	S mm	g
58 23 10 10	**10**	9x12	21.5	11	7.1	17.5	57
58 23 10 11	**11**	9x12	22.5	11	8.6	17.5	55
58 23 10 12	**12**	9x12	24.5	12	9	17.5	59
58 23 10 13	**13**	9x12	26	12	10	17.5	55
58 23 10 14	**14**	9x12	27	13	11	17.5	60
58 23 10 16	**16**	9x12	30.5	13	13	17.5	65
58 23 10 17	**17**	9x12	31.5	13	14	17.5	64
58 23 10 18	**18**	9x12	33	15	14.8	17.5	74
58 23 10 19	**19**	9x12	34	15	15.8	17.5	80
58 23 10 21	**21**	9x12	38.5	15	16.2	20*	88
58 23 10 22	**22**	9x12	39.5	15	17	20*	92
58 23 10 24	**24**	9x12	40	15	18	20*	75

* Caution! Modified settings on torque wrench (refer to note on page 207)

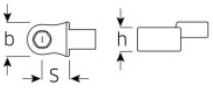
733a/10 Open ring insert tools

AS-drive

Code	"	mm	b mm	h mm	W mm	S mm	g
58 63 10 24	**3/8**	9x12	21.5	11	7.1	17.5	55
58 63 10 28	**7/16**	9x12	22.5	11	8.6	17.5	56
58 63 10 32	**1/2**	9x12	26	12	9.5	17.5	58
58 63 10 34	**9/16**	9x12	27.5	13	11	17.5	59
58 63 10 36	**5/8**	9x12	30.5	13	12.7	17.5	61
58 63 10 38	**11/16**	9x12	33	15	14	17.5	48
58 63 10 40	**3/4**	9x12	34	15	15.8	17.5	76

736 BIT holder insert tools

Internal hex drive with a collar-thrust spring. Bits are easy to insert, lock securely in position and can be removed just as easily; even hex bits with a wide groove (Type E, DIN 3126/ISO 1173).

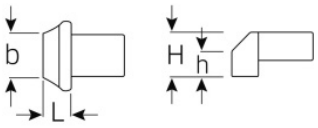


Code	size	inside O	"	mm	b mm	h mm	S mm	g
58 26 10 10	**10**	D 8	5/16	9x12	16	12.5	17.5	47
58 26 26 10	**10-1**	D 6.3	1/4	9x12	14	10	17.5	45
58 26 10 40	**40**	D 8	5/16	14x18	16	12.5	25	112

inside O DIN 3126/ISO 1173

737 Blank end insert tools

gunmetal finish. To prevent damage from excessive temperatures, the locking pin, spring and washer are not fitted until the welding work has been completed. Instructions are supplied.

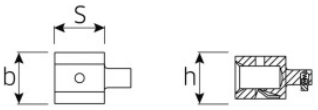


Code	size	Welding surface h x b mm	mm	H mm	L mm	g
58 27 00 10	**10**	8 x 14	9x12	14.5	8	35
58 27 00 40	**40**	11 x 25	14x18	21.5	12	98
58 27 01 00	**100** ✹	15 x 50	22x28	32	24	521

7370/10 Adaptor

QR

for using insert tools with an outer square drive of 14 x 18 mm on torque wrenches with an internal square drive of 9 x 12 mm.
Caution! Modified settings on torque wrench (refer to note on p. 207).

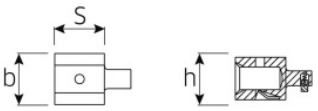


Code	■ mm	○ mm	b mm	h mm	S mm	g
58 29 00 10	9x12	14x18	31	26	30.5	114

7370/40 Adaptor

QR

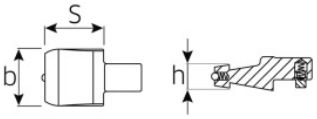
for using insert tools with an outer square drive of 9 x 12 mm on torque wrenches with an internal square drive of 14 x 18 mm.
Caution! Modified settings on torque wrench (refer to note on p. 207).



Code	■ mm	○ mm	b mm	h mm	S mm	g
58 29 00 40	14x18	9x12	28	21	21.5	115

7370/10-2 Adaptor

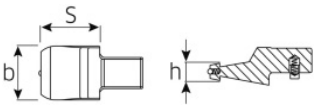
for use with insert tools with a lateral dovetail profile in torque wrenches with 9 x 12 mm internal square drives.
Caution! Modified settings on torque wrench (refer to note on p. 207).



Code	■ mm	b mm	h mm	S mm	g
58 29 00 12	9x12	23.5	9.5	24	51

7370/40-2 Adaptor

for use with insert tools with a lateral dovetail profile in torque wrenches with 14 x 18 mm internal square drives.
Caution! Modified settings on torque wrench (refer to note on p. 207).



Code	■ mm	b mm	h mm	S mm	g
58 29 00 42	14x18	31.5	9.5	34.6	138

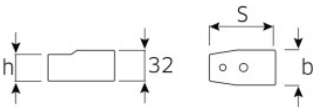
7370/40-1 Adaptor

for using shell tools with an internal square drive of 24.5 x 28 mm on torque wrenches with an internal square drive of 14 x 18 mm.
Caution! Modified settings on torque wrench (refer to note on p. 207).

Code	■ mm	■ mm	L mm	g
58 29 00 41	14x18	24.5x28	66	251

7370/80 Shell adaptor

for attaching 14 x 18 mm insert tools.
Caution! Modified settings on torque wrench (refer to note on p. 207).



Code	○ mm	○ mm	b mm	h mm	S mm	g
58 29 00 80	24.5x28	14x18	36	26	70	281

7370/100 Adaptor

for using shell tools with an internal square drive of 24.5 x 28 mm on torque wrenches with an internal square drive of 22 x 28 mm.
Caution! Modified settings on torque wrench (refer to note on p. 207).

Code	S mm	■ mm	■ mm	L mm	g
58 29 11 00	100	24.5x28	22x28	85	563

730R/40/32 Torque wrench set

32 pieces, in steel case, for general service work.
Content:
- 1 SERVICE-MANOSKOP® No 730/40, 80–400 N m
- 1 ratchet insert tool No 735/20, reversible, 1/2" ■-drive
- 1 square drive insert tool No 734/20, 1/2" ■-drive
- 7 o/e insert tools No 731/40, sizes 13, 15, 17, 19, 22, 27, 30 mm
- 1 No 3731/40 size 24 mm;
- 7 ring insert tools No 732/40, sizes 13, 15, 17, 19, 22, 24, 27 mm
- 10 sockets, bi-hexagon No 50, sizes 13, 14, 15, 17, 19, 22, 24, 27, 30, 32 mm
- 4 accessories, 1/2" O-drive:
- 1 T-handle No 506
- 1 extension 255 mm No 509/10
- 1 extension 130 mm No 509/5
- 1 extension 55 mm No 509/2

Code	g	
96 50 20 53	9739	1

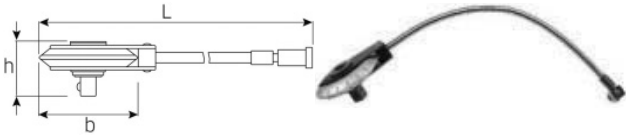
Tool holder

with tool carrier to receive insert/shell tools (without torque function).

Code	No	mm	mm	L mm	g
18 20 00 01	**1820**	9x12	-	382.5	490
18 21 00 01	**1821**	14x18	-	575	720
18 22 00 03	**1822**	-	24.5x28	1000	2000

7380N/7385N Torque angle gauges

for angle controlled bolt/screw tightening, with static read-off point. Read-off possible from any angle thanks to a pair of angled scales. Removable magnet for attaching sockets with 1/2" internal square drive. For use in conjunction with tightening tools such as Service MANOSKOP® No 730N. Since this tightening method requires a pre-determined snug torque to be applied, it is essential to choose a torque wrench covering both snug torque as well as maximum torque required to reach the recommended tightening angle. Whether 1/2" or 3/4" sq.dr. Torque Angle Gauge is used depends upon the square drive of the appropriate torque wrench employed.



Code	No	O "	■ "			b mm	h mm	L mm	g
54 01 00 01	**7380N**	1/2	1/2	± 360°	2°	78	43	416	494
54 01 00 02	**7385N**	3/4	3/4	± 360°	2°	78	76	416	720

Ratchet spare parts sets for torque wrenches No 721/5–80

Code	No	Content	g
59 19 10 05	**7210/5**	For ratchet/torque wrench No 721/5: 1 pinion, 1 pawl, 1 switch-over button and pin, 1 ball, 2 compression springs, 2 screws	53
19 04 00 00	**5120 + 7210/15**	For ratchet/torque wrench No 721/15: 1 pinion, 1 pawl, 1 lever, 1 lever pin, 1 ball, 2 compression springs, 2 screws	127
59 19 10 30	**7210/30**	For ratchet/torque wrench No 721/30: 1 pinion, 1 pawl, 1 lever, 1 lever pin, 1 ball, 2 compression springs, 2 screws	134
59 19 10 80	**7210/80**	For ratchet/torque wrench No 721Nf/80, 721Nf/100, 735/80: 1 pinion, 2 pawls, 2 spring contact points, 2 compression springs	448

Sets of spare parts for ratchet insert tools No 725QR, No 735

4150QR Spare parts set

Content:
1 pinion; 1 pawl; 2 lever with pin; 1 ball; 2 compression springs;
2 screws M 1.7 x 8; 1 cover plate

Code	for No	g	
19 01 10 20	725QR/4	24	1

4350QR Spare parts set

Content:
1 pinion, 1 pawl, 1 lever with pin, 1 ball, 2 compression springs, 2 screws

Code	for No	g	
19 02 00 20	725QR/5	51	1

7250QR/10 Spare parts set

Content:
1 pinion, 1 pawl, 1 lever with pin, 1 ball, 2 compression springs, 2 screws

Code	for No	g	
19 04 10 20	725QR/10	64	1

5120QR Spare parts set

Content:
1 pinion, 1 pawl, 1 lever with pin, 1 ball, 2 compression springs, 2 screws

Code	for No	g	
19 04 00 20	725QR/20	127	1

7350/5 Set of spare parts

Content:
1 pinion, 1 pawl, 1 switching disk, 1 spring, 3 screws.

Code	for No	g	
59 25 10 05	735/5	85	1

for ratchets from 12/97

7350/10 Set of spare parts

Content:
1 pinion, 1 pawl, 1 switching disk, 1 spring, 3 screws.

Code	for No	g	
59 25 10 10	735/10	96	1

for ratchets from 12/97

7350/20 Set of spare parts

Content:
1 pinion, 1 pawl, 1 switching disk, 1 spring, 3 screws.

Code	for No	g	
59 25 10 20	735/20	146	1

for ratchets from 4/96

7350/40 Set of spare parts

Content:
1 pinion, 1 pawl, 1 switching disk, 1 spring, 3 screws.

Code	for No	g	
59 25 10 40	735/40	219	1

for ratchets from 5/97

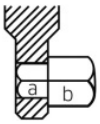
7350/40HD Set of spare parts

Content:
1 pinion, 1 pawl, 1 switching disk, 1 spring, 3 screws.

Code	for No	g	
59 25 10 65	735/40HD	300	1

70V Square drive units

for torque wrenches and insert tools.



Code	size	for No	a "	b "	L mm	g	
59 01 00 01	**1**	71...V/1	1/4	1/4	17.5	5	5
59 01 00 14	**11**	734/4	3/8	1/4	22	12	5
59 01 00 03	**3**	734/5	3/8	3/8	25.8	17	5
59 01 00 05	**5**	734/10	3/8	1/2	30	28	5
59 01 00 11	**502 1/2**	720/30; 734/20	1/2	1/2	33.5	39	5
59 01 00 07	**7**	721/30	1/2	1/2	44.3	52	5
59 01 00 08	**8**	734/40	3/4	3/4	52.2	138	5
59 01 00 15	**12**	720Nf/80; 721Nf/80+100	3/4	3/4	65	179	1
59 01 00 16	**16***	720Nf/80; 721Nf/80+100; 734/40; 734/80; 734/100; 735/80; 735/100	3/4	3/4	88	240	1

* extra-long, firmly locked, so usable from both sides

MULTIPOWER

Makes child's play of the largest torques.
MULTIPOWER – or really “tough work”.
STAHLWILLE MULTIPOWER torque multipliers with planetary gears take the fatigue out of tightening or loosening stiff or large bolt connections. A long lever is not necessary.
STAHLWILLE MULTIPOWER multiplies human strength; steady torque transfer is easy on nuts and bolts.
Even the largest torques are transferred with ease and precision over long periods.
Accordingly, construction materials and workmanship are extremely robust.
When combined with STAHLWILLE torque wrenches, MULTIPOWER really shows its strength.
The MULTIPOWER range extends to 5000 N m/3687 ft.lb.
MULTIPOWER tools are also available on request up to 12000 N m/8850 ft.lb.
The MULTIPOWER from 2000 N m are fitted with an anti-backlash device.

MULTIPOWER

with overload protection and planetary gears, in carrying case, with spare hex. for overload device, deviation of indication ± 5%.

Code	No	N m[1])	ft.lb[1])	N m[2])	ft.lb[2])	Gear ratio	Torque ratio	○ "	■ "	b mm	h mm	L mm	g	g with box
53 03 08 00	**MP300-800**	800	590	229	169	4 : 1	1 : 3.5	1/2	3/4	66	85	215	2000	5838
53 03 13 50	**MP300-1350**	1350	996	375	277	4 : 1	1 : 3.6	3/4	3/4	90	106	265	3400	7500
53 03 20 00	**MP300-2000*)**	2000	1475	160	118	16 : 1	1 : 12.5	1/2	1	95	161	330	7000	11000
53 03 30 00	**MP300-3000*)**	3000	2212	240	177	16 : 1	1 : 12.5	3/4	1	95	161	330	7000	10805
53 03 50 00	**MP300-5000*)**	5000	3687	294	217	20 : 1	1 : 17.0	3/4	1 1/2	120	180	400	10400	14000

MULTIPOWER tools are also available on request up to 12000 N m/8850 ft.lb.
*) with anti-backlash device [1]) max. output [2]) max. input

Spares for MULTIPOWER

Sun wheel with overload cutout

Code	No	for No	g
59 03 08 00	**SR300-800**	MP300-800	45
59 03 13 50	**SR300-1350**	MP300-1350	106
59 03 20 00	**SR300-2000**	MP300-2000	120
59 03 30 00	**SR300-3000**	MP300-3000	130
59 03 50 00	**SR300-5000**	MP300-5000	127
59 30 00 39	**SR290N**	STW 290N	41
59 30 00 67	**SR295N**	STW 295N	95
59 30 00 68	**SR391N**	STW 391N	95
59 30 00 69	**SR392N**	STW 392N	105
59 30 00 70	**SR393N**	STW 393N	105

Replacement square drives

drilled, for STAHLWILLE MULTIPOWER STW 390–STW 393 (until 1996).

Code	No	g
59 30 39 11	**STW 391-700 ***	89
59 30 39 21	**STW 392-70**	232
59 30 39 31	**STW 393-70**	252

* also for STW 390

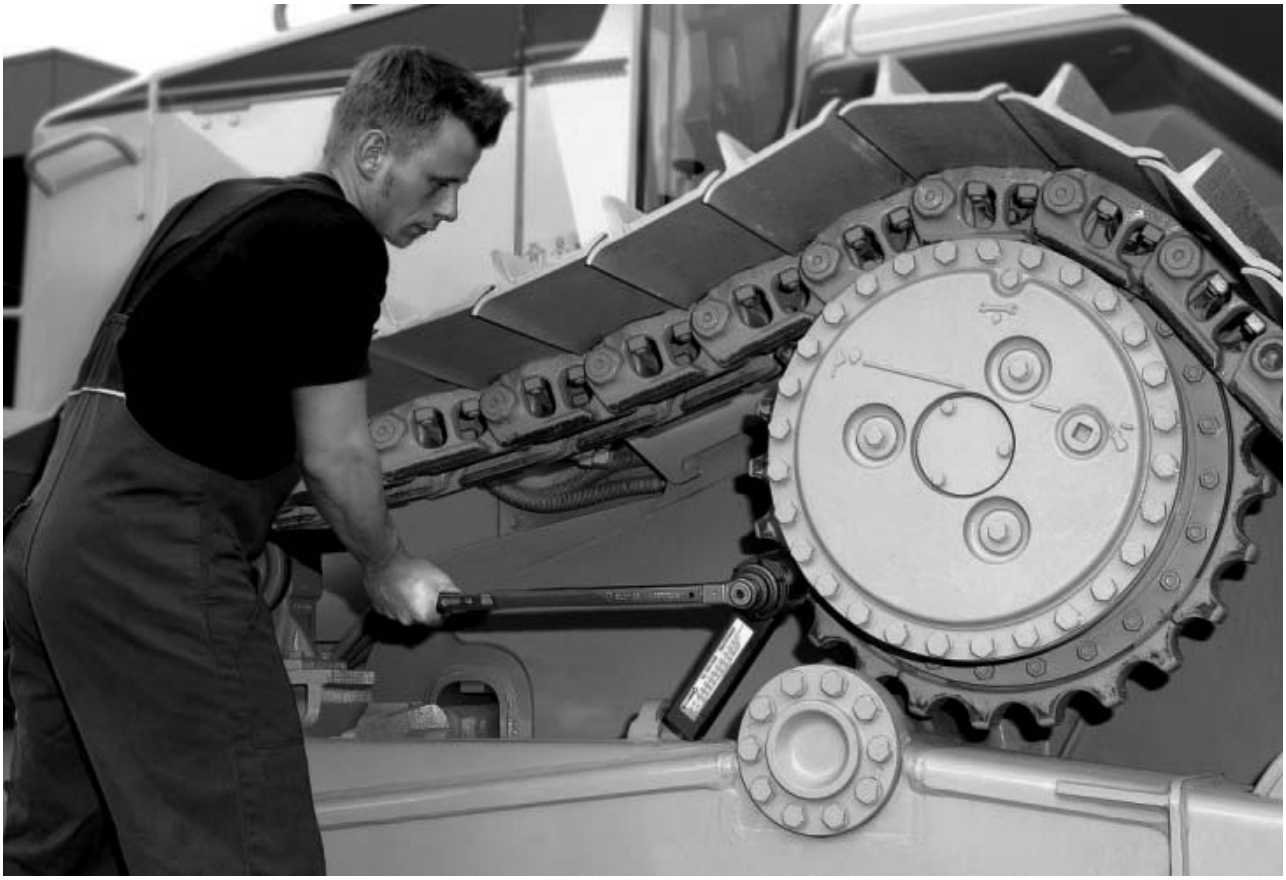
MP100-1500 MULTIPOWER

- particularly compact construction
- light and easy to handle
- with ratchet function
- working angle 8°
- with rotary scale
- for use with a torque wrench with a fixed 1/2" square drive
- patents applied for
- in carry-case
  included in the set: 3 hexagon inserts sizes 30; 32; 36 mm, 1 insert with 1" outer square drive, 1 reaction arm 400 mm
- display deviation value ± 5%

Code	N m[1])	ft.lb[1])	N m[2])	ft.lb[2])	Gear ratio	Torque ratio	⬡ "	b mm	h mm	L mm	g	g with box
96 53 15 00	1500	1106	300	221	5.62 : 1	1 : 5	1/2	105	30	165	1890	3630

[1]) max. output
[2]) max. input

5



This is how to achieve the correct tightening torque –
even if you are using inserts with an extension

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 adapters are combined with inserts or special tools, use the sum of the extensions = Σ S. Where the special tool is angled to the side, W_K will have to be determined empirically.

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

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

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 Σ S)

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

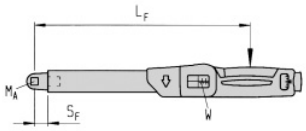
S_F = standard extension (see dimension table for torque wrenches)

ΣS = total of all extensions of the attached inserts $S_{adapter} + S_{insert} + ...$

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 Nm

Dimension table for torque wrenches: L_F = 336 mm, S_F = 17.5 mm
Dimension table for square drive insert tools: S = 17.5 mm



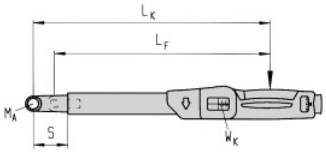
No adjustment to setting value required on torque wrench.

→ S = S_F
→ W = M_A

Example 1: adjusted setting value (1 insert tool)

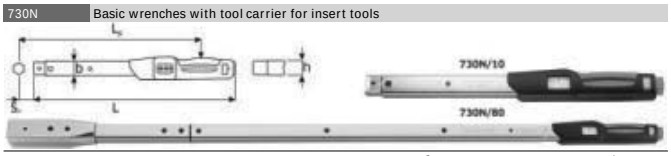
Torque wrench No 730N/20 combined with
ring insert tool No 732/40 size 36 mm
Required tightening torque for the screw M_A = 190 Nm

Dimension table for torque wrenches: L_F = 424.5 mm, S_F = 25 mm
Dimension table for ring insert tools: S = 28 mm



And this is what it looks like in the catalogue:

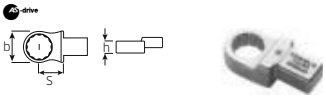
730N Basic wrenches with tool carrier for insert tools



Code	size					Fine scale		b mm	h mm	L mm	L_F mm	S_F mm	g
50181002	2	2–20 N m	20–180 in.lb	1 N m	10 in.lb	0.2 N m	9x12	28	23	275	226	17.5	737
50181005	5	10–50 N m	7–37 ft.lb	5 N m	1 ft.lb	0.25 N m	9x12	28	23	330	280.5	17.5	831
50181010	10	20–100 N m	15–75 ft.lb	10 N m	2.5 ft.lb	0.5 N m	9x12	28	23	386	336	17.5	988
50181012	12	25–130 N m	20–95 ft.lb	10 N m	2.5 ft.lb	0.5 N m	14x18	28	23	421	379	25	1128
50181020	20	40–200 N m	30–150 ft.lb	10 N m	5 ft.lb	1 N m	14x18	28	23	467	424.5	25	1264
50181040	40	80–400 N m	60–300 ft.lb	20 N m	10 ft.lb	2 N m	14x18	28	23	607	564.5	25	1655
50181065	65*	130–650 N m	100–480 ft.lb	50 N m	20 ft.lb	2.5 N m	14x18	30.6	25.6	890	848	25	3231
50181365	II/65 ●	130–650 N m	100–480 ft.lb	50 N m	20 ft.lb	2.5 N m	22x28	30.6	25.6	911	900	55	3504
50181080	80 ●	160–800 N m	120–600 ft.lb	100 N m	25 ft.lb	5 N m	22x28	30.6	25.6	1178	1167	55	4882
50181100	100 ●	200–1000 N m	150–750 ft.lb	100 N m	25 ft.lb	5 N m	22x28	30.6	25.6	1363	1297	55	5300
50581002	a/2	20–180 in.lb	1.5–15 ft.lb	10 in.lb	0.5 ft.lb	2 in.lb	9x12	28	23	275	226	17.5	737
50581005	a/5	90–450 in.lb	7–37 ft.lb	50 in.lb	1 ft.lb	2.5 in.lb	9x12	28	23	330	280.5	17.5	831
50581010	a/10	180–900 in.lb	15–75 ft.lb	100 in.lb	2.5 ft.lb	5 in.lb	9x12	28	23	386	336	17.5	988
50581020	a/20	350–1800 in.lb	30–150 ft.lb	100 in.lb	5 ft.lb	10 in.lb	14x18	28	23	467	424.5	25	1264
50581040	a/40	60–300 ft.lb	800–3600 in.lb	20 ft.lb	100 in.lb	2 ft.lb	14x18	28	23	607	564.5	25	1655

* recommended ratchet insert tool No 735/40HD

732/40 Ring insert tools



Code	mm	mm	b mm	h mm	S mm	g
58224013	13	14x18	22.5	11	25	130
58224014	14	14x18	23	11	25	123
58224015	15	14x18	24	11	25	128
58224016	16	14x18	25.5	12	25	133
58224017	17	14x18	27	12	25	135
58224018	18	14x18	29	13	25	134
58224019	19	14x18	30.5	13	25	138
58224021	21	14x18	33	15	25	144
58224022	22	14x18	34.5	15	25	145
58224024	24	14x18	37.5	15	25	153
58224027	27	14x18	42.5	17	25	162
58224028	28	14x18	45.5	19	25	175
58224030	30	14x18	46	19	25	182
58224032	32	14x18	47.5	19	25	181
58224034	34	14x18	52	19	28*	210
58224036	36	14x18	54	19	28*	203
58224041	41	14x18	60	20	30*	240

* Caution! Modified settings on torque wrench (refer to note on page 207).

L_F S_F S

$$W_K = \frac{M_A \cdot L_F}{L_F - S_F + S} = \frac{190 \text{ Nm} \cdot 424.5 \text{ mm}}{424.5 \text{ mm} - 25 \text{ mm} + 28 \text{ mm}} = \frac{190 \text{ Nm} \cdot 424.5 \text{ mm}}{427.5 \text{ mm}} = 188.7 \text{ Nm}$$

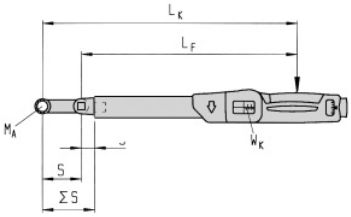
Adjusted setting value W_K = 188.7 Nm
→ value to set 189 Nm

→ S ≠ S_F
→ W ≠ M_A

Example 2: adjusted reading (insert tool and adapter)

Torque wrench No 71/2 combined with
square drive insert tool No 734/5 and adapter No 447 size 10 mm
Required tightening torque for the screw M_A = 25 Nm

Dimension table for torque wrenches: L_F = 336 mm, S_F = 17.5 mm
Dimension table for square drive insert tools: S = 17.5 mm
Dimension table for adapters: S = 50.8 mm



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

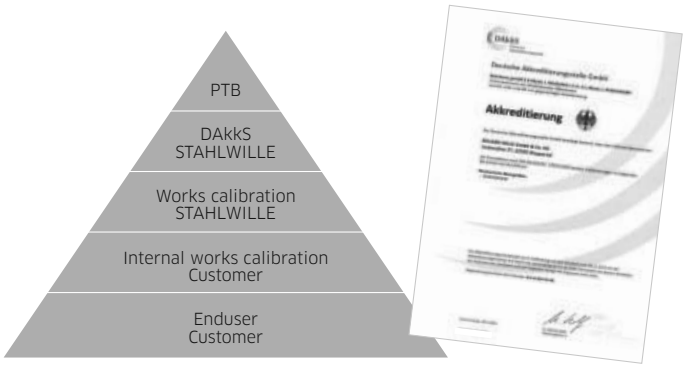
Adjusted setting value W_K = 21.7 Nm

→ ΣS ≠ S_F
→ W ≠ M_A

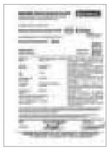
Audited. Documented. Certified.
STAHLWILLE DAkkS calibration laboratory

You can ensure controlled tightening, record the results of tightening processes, monitor torque tools.
STAHLWILLE's DAkkS calibration laboratory for torque is accredited by the German Accreditation Body in accordance with DIN EN ISO/IEC 17025: 2005. Which means the specific requirements listed in Technical Specification ISO/TS 16949 relating to testing laboratories are met. Absolutely essential: This is absolutely essential to all suppliers in the automotive sector!

The transfer torque wrenches and torque transducers in use at STAHLWILLE's DAkkS calibration laboratory are subject to regular examination by the German Federal Physics Institute (PTB) in Braunschweig. The accuracy of the torque wrenches must be proved in a series of steps and these must be traceable. Only in this way can the reliability of the readings be guaranteed. During the first stage, the end-user checks the accuracy of the torque tools in-house using suitable calibrated testing equipment. At the next stage, this test equipment is checked in STAHLWILLE's DAkkS calibrating laboratory. This accreditation by the German Accreditation Body (DAkkS) in accordance with DIN EN ISO/IEC 17025: 2005 guarantees the direct link between the measuring equipment and the national standard as laid down in DIN EN ISO 9001: 2008.



Relationship between the national standard and the equipment



Complete calibration systems perfectControl

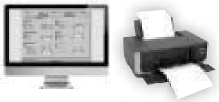
with matched components

Motorised calibrating tool
No 7794-2

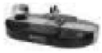
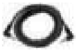
Manual calibrating unit
No 7794-1

Transducer laboratory

USB adaptor No 7757-1



PC/Printer – not included in the delivery

	Calibration systems No	**7794-2/400**	**7794-2/1000**	**7794-1/400**	**7794-1/1000**
	Code	**96 52 10 78**	**96 52 10 79**	**96 52 10 76**	**96 52 10 77**
	Weight/kg	61.9	69.6	53	60.7
	Range/N m	1–400	1–1000	1–400	1–1000
	Motorised calibrating unit	No 7794-2	No 7794-2	–	–
	Manual calibrating unit	–	–	No 7794-1	No 7794-1
	Extension unit	–	No 7791-1	–	No 7791-1
	Transducer laboratory	No 7728-1 (1–10 N m) No 7728-6 (6–60 N m) No 7728-40 (40–400 N m)	No 7728-1 (1–10 N m) No 7728-6 (6–60 N m) No 7728-40 (40–400 N m) No 7728-100 (100–1000 N m)	No 7728-1 (1–10 N m) No 7728-6 (6–60 N m) No 7728-40 (40–400 N m)	No 7728-1 (1–10 N m) No 7728-6 (6–60 N m) No 7728-40 (40–400 N m) No 7728-100 (100–1000 N m)
	USB Adaptor	No 7757-1	No 7757-1	No 7757-1	No 7757-1
	Jack cable	No 7751	No. 7751	No 7751	No 7751
	Cable for No 7728	No 7751-1	No 7751-1	No 7751-1	No 7751-1
	Square drive adaptor	No 409M (1/4" ○ x 3/8" ■) No 7787 (1/4" ○ x 3/4" ■) No 7788 (3/8" ○ x 3/4" ■) No 7789 (1/2" ○ x 3/4" ■) No 7789-4 (1/4" ○ x 1/2" ■) No 7789-5 (3/8" ○ x 1/2" ■)	No 409M (1/4" ○ x 3/8" ■) No 7787 (1/4" ○ x 3/4" ■) No 7788 (3/8" ○ x 3/4" ■) No 7789 (1/2" ○ x 3/4" ■) No 7789-4 (1/4" ○ x 1/2" ■) No 7789-5 (3/8" ○ x 1/2" ■)	No 409M (1/4" ○ x 3/8" ■) No 7787 (1/4" ○ x 3/4" ■) No 7788 (3/8" ○ x 3/4" ■) No 7789 (1/2" ○ x 3/4" ■) No 7789-4 (1/4" ○ x 1/2" ■) No 7789-5 (3/8" ○ x 1/2" ■)	No 409M (1/4" ○ x 3/8" ■) No 7787 (1/4" ○ x 3/4" ■) No 7788 (3/8" ○ x 3/4" ■) No 7789 (1/2" ○ x 3/4" ■) No 7789-4 (1/4" ○ x 1/2" ■) No 7789-5 (3/8" ○ x 1/2" ■)
	Calibrating square drive insert tools	No 734K/4 (1/4" ■) No 734K/5 (3/8" ■) No 734K/20 (1/2" ■) No 734K/40 (3/4" ■)	No 734K/4 (1/4" ■) No 734K/5 (3/8" ■) No 734K/20 (1/2" ■) No 734K/40 (3/4" ■)	No 734K/4 (1/4" ■) No 734K/5 (3/8" ■) No 734K/20 (1/2" ■) No 734K/40 (3/4" ■)	No 734K/4 (1/4" ■) No 734K/5 (3/8" ■) No 734K/20 (1/2" ■) No 734K/40 (3/4" ■)
	Calibration software	TORKMASTER 4	TORKMASTER 4	TORKMASTER 4	TORKMASTER 4
	DAkkS calibration certificate	3	4	3	4

perfect Control®

7794-2 Motorised calibrating and adjusting tool from 1 to 400 N m

The electronic perfectControl calibrating unit with its electric drive considerably reduces the amount of effort and time required for calibration and adjustment tasks on torque wrenches.

product design award 2011

- measurement possible without moving the point of application of force.
- prevents faulty readings thanks to precision-mounted spindle and finely regulated motor.
- extremely accurate calibration thanks to optimised bearings and square drives for the transducers.
- rapid, easy change of transducers thanks to quick-release latching system.
- convenient pushbutton controls for clockwise and anticlockwise measurements with automatic speed compensation.
- saves time because the bridge support is locked in place using a single-handed eccentric lever.
- transmission of readings to a PC via USB interface for further processing, analysis and archiving.
- calibration certificates can be printed or saved as a PDF file after calibration.
- as found / as left calibrations can be documented.
- during calibration, DIN EN ISO 6789:2003 in numerous languages is supported. Additional standards and works standards are available on request.
- can be upgraded to perfectControl calibrating unit No 7794-3 for angle-controlled wrenches.
- **calibration up to 1000 N m is possible using the easily attached extension unit No 7791-1** (see p. 214)
- design patent, other patents applied for

Both clicking and indicating torque wrenches can be calibrated. Calibration of transducers is possible using reference torque wrenches No 7770-100 and 7770-1000, available on request. 4 calibrating square drive insert tools No 734K (sizes 4, 5, 20, 40), 6 square drive adaptors (No 409M, No 7787, No 7788, No 7789, No 7789-4, No 7789-5), 1 USB adaptor No 7757-1, software Torkmaster, 1 jack cable No 7751, 1 cable No 7751-1 with jack plug and self-locking precision plug, 1 low-temperature cable connector, 1 hexagon key wrench No 10760CV size 2 mm are included. The unit is supplied without the torque wrench, transducers or notebook.
Transducers laboratory No 7728 (see p. 211).

7794-2

Code	Capacity N m	for transducer No	for torque wrenches with functional length (L_F) max. mm	Profile width mm	b mm	h mm	L mm	kg
96 52 10 93	1–400	7728 (sizes 1-100)	815	180	640	328	1060	57

7794-1 Manual calibrating unit from 1 to 400 N m

As for perfectControl No 7794-2, but the drive is via an ergonomically designed handwheel.
Can be upgraded to perfectControl calibrating unit No 7794-2 with an electric drive.
Calibration up to 1000 N m is possible using the easily attached extension unit No 7791-1 (see p. 214). Patents applied for. 4 calibrating square drive insert tools No 734K (sizes 4, 5, 20, 40), 6 square drive adaptors (No 409M, No 7787, No 7788, No 7789, No 7789-4, No 7789-5), 1 USB adaptor No 7751, software Torkmaster, 1 jack cable No 7751, 1 cable No 7751-1 with jack plug and self-locking precision plug, 1 low-temperature cable connector, hexagon key wrench No 10760CV size 2 mm are included. Supplied without torque wrench, transducer or notebook.
Transducers laboratory No 7728 (see p. 211).

7794-1

Code	Capacity N m	for transducer No	for torque wrenches with functional length (L_F) max. mm	Profile width mm	b mm	h mm	L mm	kg
96 52 10 92	1–400	7728 (sizes 1-100)	815	180	705	355	1060	47

7794-3 Automated calibrating and adjusting unit from 1 to 400 N m

Fully automatically calibrates electronic torque and angle-controlled wrenches made by STAHLWILLE

Design patent, other patents applied for. Model is the same as perfectControl No 7794-2, except it is additionally suited to calibrating angle-controlled wrenches. Optimum adaptation to working height with motorised height adjustment.
4 calibrating square drive insert tools No 734K (sizes 4, 5, 20, 40), 6 square drive adaptors (No 409M, No 7787, No 7788, No 7789, No 7789-4, No 7789-5), 1 USB adaptor No 7751, software Torkmaster, 1 jack cable No 7751, 1 cable No 7751-1 with jack plug and self-locking precision plug, 1 low-temperature cable connector, hexagon key wrench No 10760CV size 2 mm are included.
Supplied without torque wrench, transducer or notebook.

Code	Capacity N m	for transducer No	for torque wrenches with functional length (L_F) max. mm	Profile width mm	b mm	h mm	L mm	kg
96 52 10 94	1–400	7728 (sizes 1-100)	815	180	640	884-1134	1060	230

7728 Transducers laboratory

patented, for laboratory environments, with optimised measuring range, for calibrating torque wrenches and torque screwdrivers, for use together with perfectControl calibrating unit No 7794 or calibration system No 7706. High degree of accuracy thanks to conversion and digitization of readings within the transducer itself. With high-grade self-locking precision plug. Not susceptible to lateral forces due to low-profile construction.
With DAkkS calibration certificate. Max. display deviation value ± 0.5% of the reading. Further details on request.
Supplied in sturdy plastic case.

		Measuring ranges by deviation of indication									
		Display deviation value ± 0.5% of the reading			Display deviation value ± 0.25% of the reading						
Code	size	N m	ft.lb	in.lb	N m	ft.lb	in.lb	∅ mm	"	g	g with box
96 52 40 11	**1S** [1][2]	1–10	0.74–7.4	8.9–88.5	2–10	1.5–7.4	18–88.5	120	1/4	1735	2415
96 52 40 01	**1** [2]	1–10	0.74–7.4	8.9–88.5	2–10	1.5–7.4	18–88.5	120	1/4	1735	2415
96 52 40 02	**2** [2]	2–20	1.5–15	18–177	4–20	3–15	35–177	120	1/4	1735	2415
96 52 40 04	**4** [2]	4–40	3–30	35–354	8–40	6–30	71–354	120	3/8	2486	3136
96 52 40 06	**6** [2]	6–60	4.5–45	53–531	12–60	9–45	106–531	120	3/8	2486	3136
96 52 40 10	**10** [2]	10–100	7–74	89–885	20–100	14–74	177–885	120	3/8	2486	3136
96 52 40 20	**20** [2]	20–200	15–148	177–1770	40–200	30–148	354–1770	120	1/2	2983	3170
96 52 40 40	**40**	40–400	30–295	354–3540	80–400	60–295	708–3540	156	3/4	4846	5507
96 52 40 65	**65**	65–650	48–479	575–5753	130–650	96–479	1151–5753	156	3/4	4846	5507
96 52 40 80	**80**	80–800	59–590	708–7081	160–800	118–590	1416–7081	156	3/4	4846	5507
96 52 41 00	**100**	100–1000	74–738	885–8851	200–1000	148–738	1770–8851	156	3/4	4846	5507
96 52 43 00	**300**	300–3000	221–2214	2655–26553	600–3000	443–2214	5310–26553	195	1 1/2	10500	12000

[1]) for calibrating torque screwdrivers
[2]) available from June 2014

Audited. Documented. Certified.
STAHLWILLE calibration

Calibration – Calibration is the regular examination of the accuracy and reliability of torque tools. This is done using special-purpose calibrating equipment which is subject to stringent monitoring. This is essential because torque tools are precision instruments which are very often in use in safety-relevant environments. They are expected to provide the same level of accuracy in their readings reliably over long periods of time. In order to ensure these standards are guaranteed, it is essential that examination by means of calibration takes place at regular intervals and is documented.

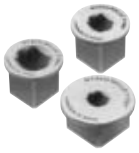
At the very least, a calibration system must include the following components:

1 **Mechanical loader –** The mechanical loader is required for rapid, accurate fixing and operation of the torque wrench. The mechanical loader also ensures that the DIN EN ISO 6789 requirement for clicking torque wrenches is fulfilled, i.e. that, above 80% of the final torque value, the force is applied slowly and steadily within a period of 0.5 to 4 seconds.

2 **Transducer –** The torque applied using the torque wrench is digitalised within the transducer and transmitted via USB cable to the PC, which ensures error-free transmission.

3 **USB-Adaptor –** From here, the data are transferred to the PC.

4 **Cable –** for connecting laboratory transducers No 7728 to USB adaptor, with jack plug and self-locking precision plug.



5 **Square drive adaptor –** The set includes the square drive adapters necessary to make full use of the measuring range of the transducers; e.g. for transducer No 7723-3 (internal square drive 3/4”), square drive adapter No 7787 (1/4” female to 3/4” male), No 7788 (3/8” female to 3/4” male) and No 7789 (1/2” female to 3/4” male).

6 **Software –** The data received in this way can then be used to issue a calibration certificate in accordance with DIN/ISO 6789.

Complete calibration systems
with matched components

Mechanical base unit

Transducer laboratory

Cable
No 7751-1

USB adaptor No 7757-1

USB adaptor

PC/Printer – not included in the delivery

Calibration systems No	7706-8 PC	7706-9 PC	7706-10 PC	7706-11 PC
Code	**96 52 10 68**	**96 52 10 69**	**96 52 10 70**	**96 52 10 74**
Weight/kg	14.2	67.6	70.6	108.4
Range/Nm	1–10	2–100	2–1000	20–3000
Mechanical loader	–	No 7791	No 7791	No 7792
Stand alone test attachment for torque screwdrivers	No 7790	–	–	–
Extension unit	–	–	No 7791-1	No 7792-1
Transducer laboratory	No 7728-1S (1–10 Nm)	No 7728-2 (2–20 Nm) No 7728-10 (10–100 Nm)	No 7728-2 (2–20 Nm) No 7728-10 (10–100 Nm) No 7728-40 (40–400 Nm) No 7728-100 (100–1000 Nm)	No 7728-20 (20–200 Nm) No 7728-100 (100–1000 Nm) No 7728-300 (300–3000 Nm)
USB adaptor	No 7757-1	No 7757-1	No 7757-1	No 7757-1
Cable for No 7728 (connection between transducer and USB adaptor)	No 7751-1	No 7751-1	No 7751-1	No 7751-1
Square drive adaptor	No 431 (3/8" ○ x 1/4" ■)	No 431 (3/8" ○ x 1/4" ■) No 409M (1/4" ○ x 3/8" ■)	No 7787 (1/4" ○ x 3/4" ■) No 7788 (3/8" ○ x 3/4" ■) No 7789 (1/2" ○ x 3/4" ■) No 409M (1/4" ○ x 3/8" ■)	No 7787 (1/4" ○ x 3/4" ■) No 7788 (3/8" ○ x 3/4" ■) No 7789 (1/2" ○ x 3/4" ■) No 7789-2 (3/4" ○ x 1½" ■) No 7789-3 (1" ○ x 1½" ■) No 7789-4 (1/4" ○ x 1/2" ■) No 7789-5 (3/8" ○ x 1/2" ■)
Calibrating square drive insert tools	–	No 734K/4 (1/4" ■) No 734K/5 (3/8" ■)	No 734K/4 (1/4" ■) No 734K/5 (3/8" ■) No 734K/20 (1/2" ■) No 734K/40 (3/4" ■)	No 734K/4 (1/4" ■) No 734K/5 (3/8" ■) No 734K/20 (1/2" ■) No 734K/40 (3/4" ■)
Adaptors	No 3115 (1/4" ■ x 1/4" ⬢ E 6,3) No 3115/1 (1/4" ■ x 1/4" ⬢ C 6,3)	– –	–	–
Calibration software	TORKMASTER 4	TORKMASTER 4	TORKMASTER 4	TORKMASTER 4
DAkkS calibration certificate	1	2	4	3

Manutork®

Mechanical loaders for torque wrenches and torque screwdrivers

Thanks to the modular design, end users can put together their own mechanical loader according to their specific requirements. Extensions with additional components are possible any time. All the components are carefully matched to ensure compatibility and can be easily fitted. This slot-in system is easy to use and has a very accurate fit. The components can be quickly and easily locked together using the integrated screw joints. The display unit can be attached at various points of the system via a holder. In this way, every user can organise his or her work to suit themselves.

7791 Mechanical base unit from 1 to 400 N m

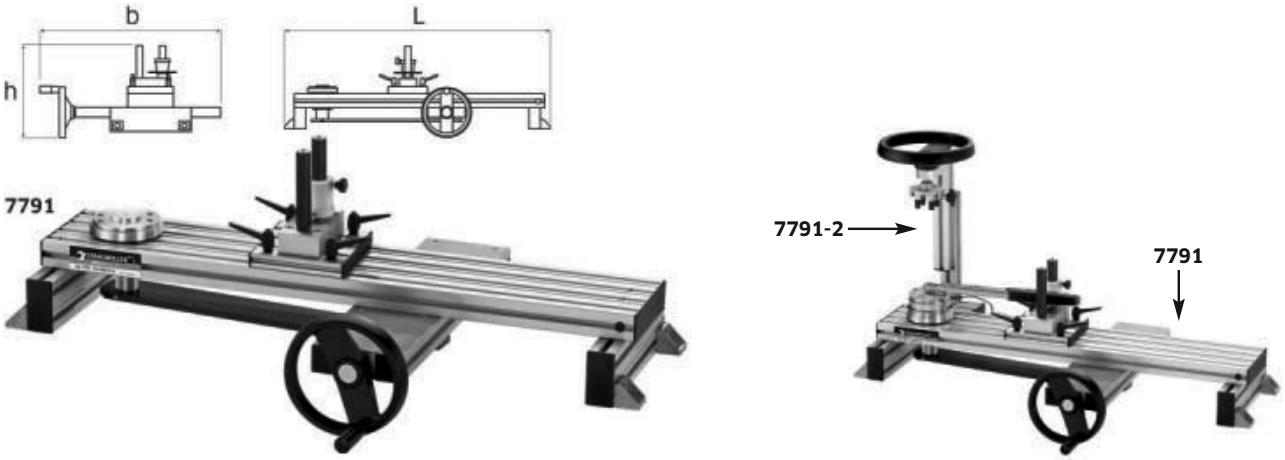
Measurement possible without moving the point of application of force.

Thanks to a specially designed force transmission system, mechanical loader No 7791 avoids the risk of the point of force application shifting during the calibration process. The lever below the test rail is actuated in a linear direction by the handwheel acting on a spindle. The linear motion is translated into a rotary movement which acts on the transducer. The torque wrench to be calibrated remains in the same position throughout the calibration process.

This prevents measuring errors caused by the point of force application being moved. Thanks to a low-friction linear ball bearing, the torque wrench is automatically levelled as it is placed in the unit. A further linear ball bearing ensures the contact with the torque wrench is friction-free. The reduction in lateral forces acting on the transducer and in the friction on the point of contact with the torque wrench results in a corresponding reduction in mismeasurement.

Patents applied for.

Supplied without torque wrench, transducer, display unit and holder.



Code	Capacity N m	for transducer No	for torque wrenches with functional length (L_F) max. mm	Profile width mm	b mm	h mm	L mm	kg
52 11 00 91	1–400	7728 (sizes 1-100)	815	180	704	323	1069	26.5

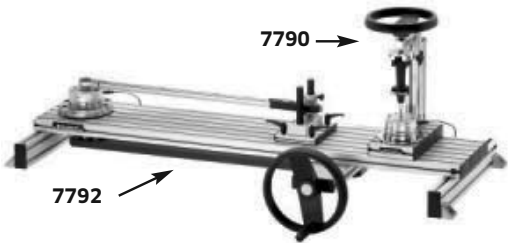
7791-1 Extension unit for No 7791, 7794-1 and 7794-2 up to 1000 N m

with one pair of adapter plates No 7770-3 for height compensation between extension unit No 7791-1 and perfectControl calibrating units No 7794-1 and No 7794-2.

Code	Capacity N m	for torque wrenches with functional length (L_F) max. mm	Profile width mm	b mm	h mm	L mm	kg
52 11 01 91	–1000	1390 (7791 + 7791-1)	180	308	135	673	5.4

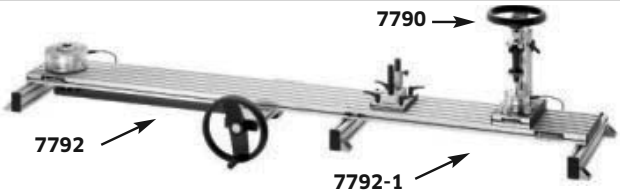
7792 Mechanical base unit from 20 to 1000 N m

Patents applied for.



Code	Capacity N m	for transducer No	for torque wrenches with functional length (L_F) max. mm	Profile width mm	b mm	h mm	L mm	kg
52 11 00 92	20–1000	7728 (sizes 20; 100; 300)	1390	270	722	323	1668.5	57

7792-1 Extension unit for No 7792 up to 3000 N m

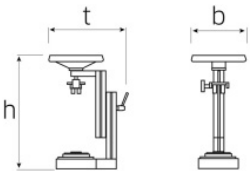


Code	Capacity N m	for torque wrenches with functional length (L_F) max. mm	Profile width mm	b mm	h mm	L mm	kg
52 11 01 92	–3000	2390 (7792 + 7792-1)	270	558	135	1073	23.9

Test attachments for torque screwdrivers

7790 Stand alone test attachment for torque screwdrivers

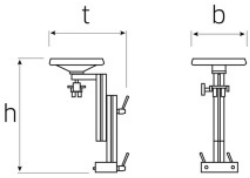
Can be bolted to mechanical loader No 7792.
The torque screwdriver to be calibrated is inserted in the square mount of the transducer and fixed using the universal central clamp. The handwheel ensures that the required force is applied in a controlled manner to the torque screwdriver.
Supplied without transducer or torque screwdriver.



Code	Capacity N m	for transducer No	b mm	h mm	t mm	kg
58 52 10 90	–10	7728-1S	250	442–593	351	7.9

7791-2 Test attachment for torque screwdrivers

Can be bolted onto mechanical loader No 7791.
The torque screwdriver to be calibrated is inserted in the square mount of the transducer and fixed using the universal central clamp. The handwheel ensures that the required force is applied in a controlled manner to the torque screwdriver.



Code	Capacity N m	b mm	h mm	t mm	kg
52 11 02 91	–10	250	442–593	351	3.9

Accessory

7750-1 Holder

for display unit No 7750.
Can be bolted to mechanical loaders and test attachments.

Code	g
52 10 10 50	165

Electronic torque tester for torque wrenches Sensotork® 7707 W (For complete calibration systems, see p. 209, 213)

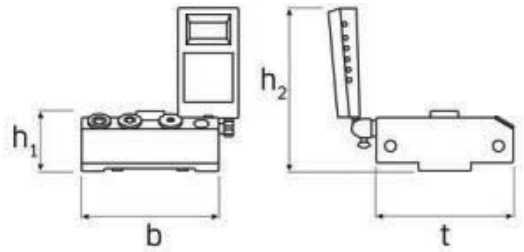
Compact workshop-based torque tester for easy adaptation by replacement of the transducers.
High degree of accuracy thanks to flat transducer and conversion and digitalisation of readings within the transducer (see p. 217).
High degree of safety through display showing actual torque read-off where clicking torque wrenches are used.

7707 W Workshop torque tester Sensotork®

Electronic workshop torque tester for torque wrenches, consisting of:
- transducer, patent
- holder
- display unit (registered design)
- tripod for display unit (with 1.5 m cable)
- spiral cable
- mains adaptor (110 V–230 V with interchangeable socket adaptors) or direct connection to 12 V in-car supply is possible
- square drive adaptor (No 7707-2W, No 7707-2-1W, No 7707-2-2W, No 7707-3W)
- kit for attaching the unit to a workbench or wall in a horizontal or vertical testing position

for clockwise and anticlockwise use. Units of measurement: N m, ft.lb, in.lb. The easily interchangeable transducers are attached to the holder by means of a QuickRelease safety lock. Low lateral forces thanks to low-profile transducers, automatic detection of the transducer, flexible and user friendly because the unit can be used horizontally or vertically and the display unit can be placed in many positions, additional tripod with 1.5 m cable for mounting the display unit to facilitate visual monitoring when using longer torque wrenches, especially broad measuring range from approx. 2% to 100% of rated value. The software No 7759-4, including USB hub and jack cable (see p. 218), enables readings to be transferred to the PC for documenting and for generating calibration certificates in accordance with DIN EN 6789:2003 (no separate power supply needed, power comes from PC). While individual transducers are being recalibrated, the torque tester itself remains on-site for further use. Wide range of application (-20°C to +60°C). Complies with DIN 51309: 2005, Class 2 and DKD-R 3-8: 2003. With certificate. Supplied in sturdy plastic case.

5



QR QuickRelease
Rapid change and firm locking of the transducers thanks to the QuickRelease safety lock.

Interchangeable square drive adapters:
A set of interchangeable square drive adapters are conveniently stored in the mounting block for a range of different drive sizes.

Code	No	Capacity N m	Capacity ft.lb	Capacity in.lb	▢ "	b mm	h_1 mm	h_2 mm	t mm	⚖ g	⚖ g with box
96 52 10 80	**7707-1W**	0.4–20	0.3–15	3.5–177	1/4	180	79	215	180	6255	9500
96 52 10 72	**7707-2W [1])**	2–100	1.5–74	18–885	3/8	180	79	215	180	7025	10300
96 52 10 83	**7707-2-1W [2])**	4–200	3–148	35–1770	1/2	180	79	215	180	7511	10975
96 52 10 84	**7707-2-2W [3])**	8–400	6–295	71–3540	3/4	180	79	215	180	7654	11100
96 52 10 82	**7707-3W [3])**	25–1100	18–812	221–9736	3/4	180	79	215	180	7495	11000

[1]) with square drive adaptor No 409M (1/4" ▢ x 3/8" ■)
[2]) with square drive adaptors No 7789-4 (1/4" ▢ x 1/2" ■), No 7789-5 (3/8" ▢ x 1/2" ■)
[3]) with square drive adaptors No 7787 (1/4" ▢ x 3/4" ■), No 7788 (3/8" ▢ x 3/4" ■), No 7789 (1/2" ▢ x 3/4" ■)

Which transducer is for which torque wrench?

(Calibration in accordance with DIN EN ISO 6789: 2003)

STAHLWILLE's recommendation:

+++ very well suited ++ well suited + suitable

No	7721-1	7722	7723-1	7723-2	7723-3
730D/10		+++			
730D/20			+++		
730D/40				+++	
730D/65					+++
730N/2	+++				
730N/5		+++			
730N/10		+++	++		
730N/12			+++		
730N/20			+++	++	
730N/40				+++	
730N/65					+++
730Na/2	+++				
730Na/5		+++			
730Na/10		+++	++		
730Na/20			+++	++	
730Na/40				+++	
730/2	+++	++	+		
730/4		+++	++	+	
730a/2	+++	++	+		
730a/4		+++	++	+	
730/5		+++	++		
730/10		+++	++	+	
730/12			+++	+++	
730/20			+++	++	+
730/40				+++	++
730/65					+++

No	7721-1	7722	7723-1	7723-2	7723-3	7724-1
730a/5		+++	++			
730a/10		+++	++	+		
730a/12			+++	++	+	
730a/20			+++	++	+	
730/80					+++	+
720Nf/80					+++	+
721/5		+++	++			
721/15			+++	++	+	
721/30				+++	++	
721Nf/80					+++	+
721Nf/100					+++	+
755R/1	+++					
755/4		+++	++			
755/10		+++	++	+		
755/20			+++	++	+	
755/30				+++	++	
71/40				+++	++	
71/80					+++	+
71aR/80					+++	+
73Nm/15	+++	++				
712R/6		+++				
712R/20			+++			
712R/40				+++		
713R/6		+++				
713R/20			+++			
713R/40				+++		

5

7721–7724 Transducers

QR

Patent, for calibration of torque wrenches and torque screwdrivers, high degree of accuracy thanks to conversion and digitization of readings within the transducer itself. Not susceptible to lateral forces due to low-profile construction. Can also be used as part of a calibration system (see p. 209, 213). With certificate. Supplied in sturdy plastic case.

		Measuring ranges by deviation of indication												
		Display deviation value ± 1% of the reading			Display deviation value ± 0.5% of the reading			Display deviation value ± 0.25% of the reading						
Code	No	N m	ft.lb	in.lb	N m	ft.lb	in.lb	N m	ft.lb	in.lb	∅ mm	"	g	g with box
96 52 10 21	**7721 [1])**	0.2-10	0.15-7.4	1.8-88.5	1-10	0.74-7.4	8.9-88.5	2-10	1.5-7.4	17.7-88.5	120	1/4	1735	2411
96 52 10 00	**7721-0**	0.2-10	0.15-7.4	1.8-88.5	1-10	0.74-7.4	8.9-88.5	2-10	1.5-7.4	17.7-88.5	120	1/4	1735	2411
96 52 10 26	**7721-1**	0.4-20	0.3-15	3.5-177	2-20	1.5-15	18-177	4-20	3-15	35-177	120	1/4	1735	2411
96 52 10 22	**7722**	2-100	1.5-74	18-885	10-100	7-74	89-885	12-100	9-74	106-885	120	3/8	2486	3223
96 52 10 23	**7723-1**	4-200	3-148	35-1770	20-200	15-148	177-1770	40-200	30-148	354-1770	120	1/2	2983	3605
96 52 20 23	**7723-2**	8-400	6-295	71-3540	40-400	30-295	354-3540	80-400	59-295	708-3540	120	3/4	3134	3745
96 52 10 28	**7723-3**	25-1100	18-812	221-9736	110-1100	81-812	974-9736	220-1100	162-812	1947-9736	120	3/4	2998	3761
96 52 10 29	**7724-1 [2])**	150-3000	111-2214	1328-26553	300-3000	221-2214	2655-26553	600-3000	443-2214	5311-26553	195	1 1/2	10500	12000

[1]) for calibrating torque screwdrivers

[2]) for use with mechanical loader No 7792 and 7792-1 (see p. 215)

Note!

Torque testers are measuring instruments! They have to be regularly calibrated and, where necessary, adjusted, using suitable calibration equipment. We recommend recalibrating every 12 months.

Accessories for workshop torque tester and calibration systems

7750 Display unit

registered design, for displaying the actual torque as measured. Units of measurement: N m, ft.lb, in.lb. Modes of operation: track, peak hold, first peak (only with manual operation), additional display of actual torque applied with clicking torque wrenches. Swivels to any desired position thanks to universal ball-joint.

Code	g
52 10 00 50	182

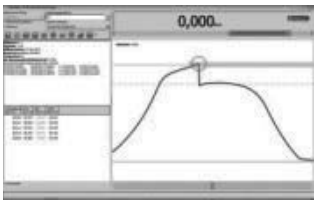
7759-4 USB adaptor, jack cable and software Torkmaster

Link between perfectControl or transducer and PC. For adjusting and calibrating torque wrenches and torque screwdrivers. Produces calibration certificates in accordance with DIN EN ISO 6789: 2003, which can be printed out or saved as PDF files.

- as found / as left calibrations can be documented.
- graphical representation of the torque progression
- user management
- 17 languages
- equipment testing system

System requirements:

- PC
- Microsoft Windows XP SP3 or later operating system
- USB connection



Code	L m	g
96 58 36 29	1.5	137

7751 Jack cable

Connection between transducers No 7721-7724 and USB adaptor or display unit, with jacks at both ends, 90° angled.

Code	L m	g
52 11 00 51	1.5	50

7751-1 Cable for No 7728

for connecting laboratory transducers No 7728 to a USB hub or display unit, with jack plug, 90° angled, and self-locking precision plug.

Code	L m	g
52 11 00 54	1.5	50

7752 Spiral cable

Connection between transducer and display unit or USB adaptor, with jacks at both ends, 90° angled.

Code	L max. mm	g
52 11 00 52	500	35

7760 Mains adaptor

Input:
110 V–230 V AC ,
Output: 9 V DC,
with interchangeable socket adaptors.

Code	Volt	g
52 11 00 56	110–230	385

7761 Interface adaptor

for fully automated calibration and adjustment of No 714 angle-controlled torque wrenches with perfectControl calibrating and adjusting units No 7794-2 and 7794-3.

Code	g
52 11 00 61	26

7761/3 Interface adaptor set

Contents
No 7761 interface adaptor
No 7752 spiral cable
No 7760 mains adaptor

Code	g
96 52 11 61	446

409M Square drive adaptor

1/4" socket x 3/8" plug
(6.3 x 10 mm).

Code	L mm	∅ mm	g
11 03 00 10	13	25	14

7787 Square drive adaptor

1/4" socket x 3/4" plug
(6.3 x 20 mm).

Code	L mm	∅ mm	g
58 52 10 87	15.5	29	41

7788 Square drive adaptor

3/8" socket x 3/4" plug
(10 x 20 mm).

Code	L mm	∅ mm	g
58 52 10 88	23.5	29	52

7789 Square drive adaptor

1/2" socket x 3/4" plug
(12.5 x 20 mm).

Code	L mm	∅ mm	g
58 52 10 89	23.5	29	42

7789-2 Square drive adaptor

3/4" socket x 1 1/2" plug
(20 x 40 mm).

Code	L mm	∅ mm	g
58 52 30 89	44	60	383

7789-3 Square drive adaptor

1" socket x 1 1/2" plug
(25 x 40 mm).

Code	L mm	∅ mm	g
58 52 40 89	44	60	291

7789-4 Square drive adaptor

1/4" socket x 1/2" plug
(6.3 x 12.5 mm).

Code	L mm	∅ mm	g
58 52 40 90	15.5	29	25

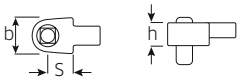
7789-5 Square drive adaptor

3/8" socket x 1/2" plug
(10 x 12.5 mm).

Code	L mm	∅ mm	g
58 52 40 91	15.5	29	28

734K Calibrating square drive insert tools

Without a ball or pin (so not suitable for bolt tightening). Optimum measuring results during calibration thanks to reduced lateral forces.



Code	size	■ "	mm	b mm	h mm	S mm	g
58 24 30 04	**4**	1/4	9x12	20	14	17.5	76
58 24 30 05	**5**	3/8	9x12	20	14	17.5	80
58 24 30 20	**20**	1/2	14x18	27	18	25	218
58 24 30 40	**40**	3/4	14x18	40	25	25	410
58 24 11 00 100 ✹		3/4	22x28	43	25	55	895

70VK Calibrating square drive units

Without a ball or pin (so not suitable for bolt tightening). Optimum measuring results during calibration thanks to reduced lateral forces.

Code	size	for No	a "	b "	L mm	g	
59 01 10 14	**11**	734/4	3/8	1/4	24.7	15	5
59 01 10 03	**3**	734/5	3/8	3/8	27.6	20	5
59 01 10 11	**502 1/2**	734/20	1/2	1/2	36.9	60	5
59 01 10 08	**8**	734/40, 734/100	3/4	3/4	52.2	147	5

Allocation of coefficients of friction and recommended values to various materials, surfaces and joint lubrication states

Class of friction coefficient	Range for µG and µK	Selection of typical examples for Material/surfaces	Selection of typical examples for Lubricants
A	0.04 to 0.10	bright metal, hardened and temperated black, phosphated electrocoatings like Zn, Zn/Fe, Zn/Ni, zinc flake coatings	solid lubricants such as MoS_2, graphite, PTFE, PA, PE, PI in bonded coatings, as topcoats or in pastes; melted wax, wax dispersion
B	0.08 to 0.16	bright metal, hardened and temperated black, phosphated electrocoatings like Zn, Zn/Fe, Zn/Ni, zinc flake coatings, Al and Mg alloyscoatings	solid lubricants, such as MoS_2, graphite, PTFE, PA, PE, PI in bonded coatings, as topcoats or in pastes; melted wax; wax dispersions; greases; oils; delivery state
		hot-dip zinc-plated	MoS_2; graphite; wax dispersions
		organic coatings	with integrated solid lubricant or wax dispersion
		austenitic steel	solid lubricants or waxes; pastes
C	0.14 to 0.24	austenitic steel	wax dispersion pastes
		bright metal, phosphatised	delivery status (slightly oiled)
		electroplated coatings like Zn, Zn/Fe, Zn/Ni, zinc flake coatings, adhesive	without
D	0.20 to 0.35	austenitic steel	oil
		electroplated coatings like Zn, Zn/Fe	without
E	≥ 0.30	electroplated coatings like Zn, Zn/Fe Zn/Ni, austenitic steel, Al, and Mg alloys	without

Approximate values for static friction µT in the joint

Material pairings	Coefficient of static friction in this state dry	lubricated
steel – steel/cast steel	0.1 to 0.23	0.07 bis 0.12
steel – soft cast iron	0.12 to 0.24	0.06 to 0.1
soft cast iron – soft cast iron	0.15 to 0.3	0.2
bronze – steel	0.12 to 0.28	0.18
soft cast iron – bronze	0.28	0.15 to 0.2
steel – copper alloy	0.07	
steel – aluminum alloy	0.1 to 0.28	0.05 to 0.18
aluminum – aluminum	0.21	

Assembly pretension forces $F_{M\,Tab}$ and tightening torque M_A at n = 0.9 for **setscrews** with standard metric threads to DIN ISO 262; head sizes of hex screws to DIN EN ISO 4014 to 4018, screws with outer hex to DIN 34800 and cheese head to DIN EN ISO 4762 and central bore "medium" to DIN EN 20273.

Dim.	Strength class	Assembly pretension forces $F_{M\,Tab}$ in kN for μ_G = 0.08	0.10	0.12	0.14	0.16	0.20	0.24	Tightening torque M_A in N m for $\mu_K = \mu_G$ = 0.08	0.10	0.12	0.14	0.16	0.20	0.24
	8.8	4.6	4.5	4.4	4.3	4.2	3.9	3.7	2.3	2.6	3.0	3.3	3.6	4.1	4.5
M 4	10.9	6.8	6.7	6.5	6.3	6.1	5.7	5.4	3.3	3.9	4.6	4.8	5.3	6.0	6.6
	12.9	8.0	7.8	7.6	7.4	7.1	6.7	6.3	3.9	4.5	5.1	5.6	6.2	7.0	7.8
	8.8	7.6	7.4	7.2	7.0	6.8	6.4	6.0	4.4	5.2	5.9	6.5	7.1	8.1	9.0
M 5	10.9	11.1	10.8	10.6	10.3	10.0	9.4	8.8	6.5	7.6	8.6	9.5	10.4	11.9	13.2
	12.9	13.0	12.7	12.4	12.0	11.7	11.0	10.3	7.6	8.9	10.0	11.2	12.2	14.0	15.5
	8.8	10.7	10.4	10.2	9.9	9.6	9.0	8.4	7.7	9.0	10.1	11.3	12.3	14.1	15.6
M 6	10.9	15.7	15.3	14.9	14.5	14.1	13.2	12.4	11.3	13.2	14.9	16.5	18.0	20.7	22.9
	12.9	18.4	17.9	17.5	17.0	16.5	15.5	14.5	13.2	15.4	17.4	19.3	21.1	24.2	26.8
	8.8	15.5	15.1	14.8	14.4	14.0	13.1	12.3	12.6	14.8	16.8	18.7	20.5	23.6	26.2
M 7	10.9	22.7	22.5	21.7	21.1	20.5	19.3	18.1	18.5	21.7	24.7	27.5	30.1	34.7	38.5
	12.9	26.6	26.0	25.4	24.7	24.0	22.6	21.2	21.6	25.4	28.9	32.2	35.2	40.6	45.1
	8.8	19.5	19.1	18.6	18.1	17.6	16.5	15.5	18.5	21.6	24.6	27.3	29.8	34.3	38.0
M 8	10.9	28.7	28.0	27.3	26.6	25.8	24.3	22.7	27.2	31.8	36.1	40.1	43.8	50.3	55.8
	12.9	33.6	32.8	32.0	31.1	30.2	28.4	26.6	31.8	37.2	42.2	46.9	51.2	58.9	65.3
	8.8	31.0	30.3	29.6	28.8	27.9	26.3	24.7	36	43	48	54	59	68	75
M 10	10.9	45.6	44.5	43.4	42.2	41.0	38.6	36.2	53	63	71	79	87	100	110
	12.9	53.3	52.1	50.8	49.4	48.0	45.2	42.4	62	73	83	93	101	116	129
	8.8	45.2	44.1	43.0	41.9	40.7	38.3	35.9	63	73	84	93	102	117	130
M 12	10.9	66.3	64.8	63.2	61.5	59.8	56.3	52.8	92	108	123	137	149	172	191
	12.9	77.6	75.9	74.0	72.0	70.0	65.8	61.8	108	126	144	160	175	201	223
	8.8	62.0	60.6	59.1	57.5	55.9	52.6	49.3	100	117	133	148	162	187	207
M 14	10.9	91.0	88.9	86.7	84.4	82.1	77.2	72.5	146	172	195	218	238	274	304
	12.9	106.5	104.1	101.5	98.8	96.0	90.4	84.8	171	201	229	255	279	321	356
	8.8	84.7	82.9	80.9	78.8	76.6	72.2	67.8	153	180	206	230	252	291	325
M 16	10.9	124.4	121.7	118.8	115.7	112.6	106.1	99.6	224	264	302	338	370	428	477
	12.9	145.5	142.4	139.0	135.4	131.7	124.1	116.6	262	309	354	395	433	501	558
	8.8	107	104	102	99	96	91	85	220	259	295	329	360	415	462
M 18	10.9	152	149	145	141	137	129	121	314	369	421	469	513	592	657
	12.9	178	174	170	165	160	151	142	367	432	492	549	601	692	769
	8.8	136	134	130	127	123	116	109	308	363	415	464	509	588	655
M 20	10.9	194	190	186	181	176	166	156	438	517	592	661	725	838	933
	12.9	227	223	217	212	206	194	182	513	605	692	773	848	980	1092
	8.8	170	166	162	158	154	145	137	417	495	567	634	697	808	901
M 22	10.9	242	237	231	225	219	207	194	595	704	807	904	993	1151	1284
	12.9	283	277	271	264	257	242	228	696	824	945	1057	1162	1347	1502
	8.8	196	192	188	183	178	168	157	529	625	714	798	875	1011	1126
M 24	10.9	280	274	267	260	253	239	224	754	890	1017	1136	1246	1440	1604
	12.9	327	320	313	305	296	279	262	882	1041	1190	1329	1458	1685	1877
	8.8	257	252	246	240	234	220	207	772	915	1050	1176	1292	1498	1672
M 27	10.9	367	359	351	342	333	314	295	1100	1304	1496	1674	1840	2134	2381
	12.9	429	420	410	400	389	367	345	1287	1526	1750	1959	2153	2497	2787
	8.8	313	307	300	292	284	268	252	1053	1246	1428	1597	1754	2931	2265
M 30	10.9	446	437	427	416	405	382	359	1500	1775	2033	2274	2498	2893	3226
	12.9	522	511	499	487	474	447	420	1755	2077	2380	2662	2923	3386	3775
	8.8	389	381	373	363	354	334	314	1415	1679	1928	2161	2377	2759	3081
M 33	10.9	554	543	531	517	504	475	447	2015	2392	2747	3078	3385	3930	4388
	12.9	649	635	621	605	589	556	523	2358	2799	3214	3601	3961	4598	5135
	8.8	458	448	438	427	415	392	368	1825	2164	2482	2778	3054	3541	3951
M 36	10.9	652	638	623	608	591	558	524	2600	3082	3535	3957	4349	5043	5627
	12.9	763	747	729	711	692	653	614	3042	3607	4136	4631	5089	5902	6585
	8.8	548	537	525	512	498	470	443	2348	2791	3208	3597	3958	4598	5137
M 39	10.9	781	765	748	729	710	670	630	3345	3975	4569	5123	5637	6549	7317
	12.9	914	895	875	853	831	784	738	3914	4652	5346	5994	6596	7664	8562

Assembly pretension forces and tightening torques

MAssembly pretension forces F_M and tightening torques M_A for screws with standard metric threads to DIN 13, Page 43 (M 1.6–M 2.5–M 3 to M 39) and head contact sizes such as DIN 912 (DIN EN ISO 4762), DIN 931 (DIN EN 24014), DIN 934 (DIN EN 24032), DIN 6912, DIN 7984, DIN77990.

The table readings F_M and M_A are based on the SI unit N (Newton). 1 N = 0.102 kp, 1 Ncm = 0.102 kpcm, 1 Nm = 0.102 kpm, 1 kp = 9.81 N, 1 kpcm = 9.81 Ncm, 1 kpm = 9.81 Nm.

The assembly pretension forces F_M listed in the table above result in 90% exploitation of a screw's yield strength $\partial_{0.2}$ (DIN ISO 898 Part 1) through the comparative tension ∂_{red}, which depends on the coefficient of thread friction μ_G. The table of assembly pretension forces shows what quality of which screw is required for a particular thread friction to generate a certain required assembly pretension force F_M. The tightening torque M_A required to achieve 90% yield strength exploitation for a screw whose dimensions and quality are given can be determined from the right-hand table having regard to a specific underhead friction (μ_K).

To determine the rated torque to be applied, deduct half the spread of the corresponding torque wrench from the applicable tightening torque M_A in the table. Calculation of the table entries and notes on their application to VDI 2230, Page 1.