

*A world first – controlled fastener
tightening suddenly becomes
transparent*

**MANOSKOP®
730D**



100%

Transparency throughout the entire torquing process

730D

Service work & series production

MANOSKOP® 730D – indicating and cut-out

The 730D model is a multitasking assistant. It is the first torquing tool to provide complete transparency throughout the tightening process – and excellent value-for-money into the bargain.

Designed as a clicking wrench, it shows the user what torque was actually applied. This is a vast improvement as even experienced workers using clicking wrenches are likely to over-pull the joint after the click signal. Convinced that he has just applied – and not over-pulled – the required torque level, the user continues with the next joint and does not even notice that the result was “bad”. Now, for the first time with the 730D, the user has the opportunity to achieve a learning effect. He or she can now view the actually-applied torque on the display and adapt his or her working methods accordingly. In other words, if a user notices that he or she always tends to over-pull by a large amount, they can monitor their work every time and adjust their technique to get closer and closer to the ideal result.

The 730D's excellent value-for-money makes it the automatic choice for introducing torque-controlled tightening where hitherto no controls have taken place at all. In specific cases, it will be worth calculating the difference between the costs of performing these checks and the potential tangible and intangible costs caused by not carrying out any checks.

Thanks to the features inherent in the 730D and its comprehensive measuring range, it can replace two mechanical indicating wrenches and two clicking wrenches. Add to this the further saving gained by fewer calibration and adjustment activities and the changeover makes even more sense.



The advantage of electronic components

Physical principles which involve a combination of a coil compression spring and tilt block or articulated lever as the measuring element clearly show the disadvantages of purely mechanical systems. Here, play and wear are unavoidable. The 730D, on the other hand, integrates the benefits of electronic components while avoiding the drawbacks of mechanical parts. Thanks to the electronically controlled cut-out system, errors in measurement resulting from play or wear are virtually eliminated. The repeatability of measurements is unbeatable. Generous measuring ranges mean that fewer tools are needed. Statistical audits of the tightening values using an indicating wrench are no longer necessary. The optional PIN code makes it impossible for settings to be tampered with by unauthorised persons.

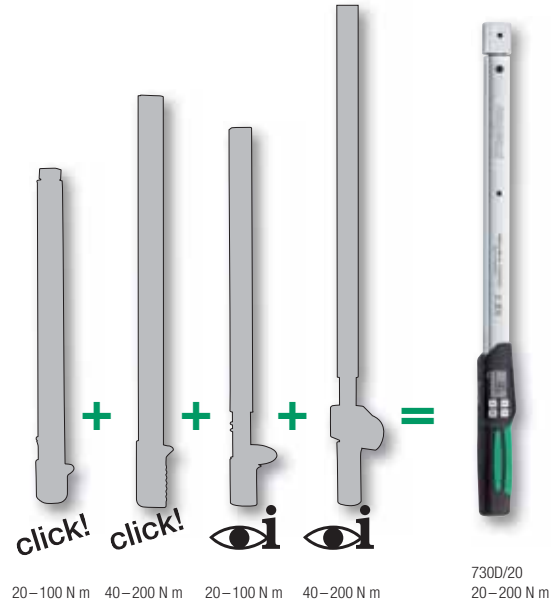


Economy

The consistent, controlled tightening of threaded fasteners saves cash! Expensive errors, rework and warranty claims can be avoided by the improved certainty available for the entire workflow. This inherent advantage is multiplied several times over when one realises that the new 730D torque wrench can replace as many as four conventional wrenches.

- Very broad measuring range – each one replaces up to 4 mechanical wrenches – 2 indicating and 2 clicking

- This means that only the costs of calibration, adjustment and maintenance will apply
- A statistical audit of the tightening values using an indicating wrench is no longer necessary because each reading can be evaluated immediately and documented
- The second, time-consuming operation using the indicating wrench, which has been necessary up to now, is no longer required. That operation was, in any case, often felt to be questionable because the results obtained from tests on screws already tightened were subject to the influence of static and sliding friction.
- As many as 10,000 cycles are possible with one battery or cell charge



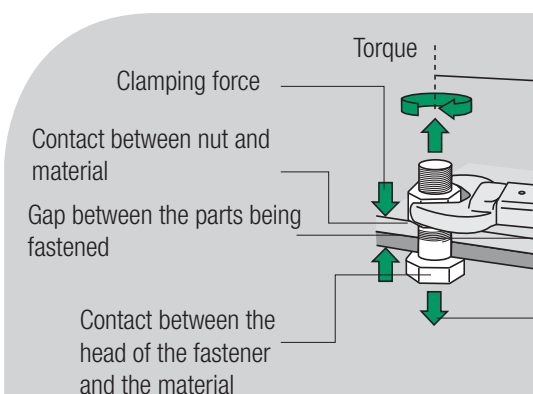
Safety

As a rule, torque tools are used in applications requiring high levels of accuracy and reliability. It must be possible to achieve the tightening values prescribed by the designer reliably every time during the tightening process. The new 730D torque wrench provides all the functions required for just that.

- Documentation of joint data generated with details of dates and times

- The ability to define a PIN code makes it possible to use the 730D in industrial environments
- Tamper proof
- Presets such as function mode, cut-out and preset values, unit of measurement, tolerances, save and deviating extension length can be stored
- Automatic display of next scheduled calibration date

- All the sensitive components are protected by the sturdy housing. Drop tests from workbench height were passed without incident
- The automatic keypad lock prevents inadvertent changes
- Double stop signals are tactile and acoustic
- The 2-component handle with its ergonomically designed comfortable green pads is resistant to oils, grease, fuels, brake fluids and Skydrol





Technical features

One fundamental drawback of click-type torque wrenches is that the user tends to pull on after the preset torque has been reached and the wrench has clicked. The reason is that the user cannot release his hold on the wrench in time when the tactile or acoustic signal is perceived. The result is an actual applied torque value which is too high, which is not measured or documented and which leads to inferior results which the user of the wrench cannot even detect. The combined measurement and documentation of the actual torque applied has only become possible with the 730D. For the first time, the transparency of the entire torquing process is guaranteed.

- Can be set to read N m, ft.lb and in.lb
- Measuring ranges:
10 – 100 N m (size 10)
20 – 200 N m (size 20)
40 – 400 N m (size 40)

- Users can learn to adapt their work technique to improve accuracy
 - Each joint is visually evaluated by means of a green or red display if the tolerances are defined
 - Tolerances can be defined as \pm values, and these may also be asymmetrical
 - As a rule, users will not be able to change the preset cut-out value, but will soon notice the amount by which this value is over-pulled and can adapt their technique to compensate
- The 730D has a memory for up to 7,500 measurements to which date and time stamps are reliably assigned, and which can be transferred to a PC, documented and stored
- 100% repeatability of cut-out values because when the digitally preset value is reached, the cut-out signals are produced electro-mechanically. This is based on the continuous electronic comparison of the preset and actual values, i.e. the target torque and the actual torque
- The 730D has been designed in such a way that its mechanical components operate in a wear-free and play-free manner
- The tool guarantees exceptional long-term repeated accuracy. Even after 30,000 cycles, the readings were still within the tolerance
- Despite the large measuring range, the target accuracy of $\pm 2\%$ was achieved every time
- Display also works for anticlockwise torque
- Adjustment of the 730D torque wrench is considerably easier than with mechanical models
- NiMH AA/LR6 rechargeable batteries, 1.2 V batteries or AA/LR6 RAM, 1.5 V rechargeable cells.

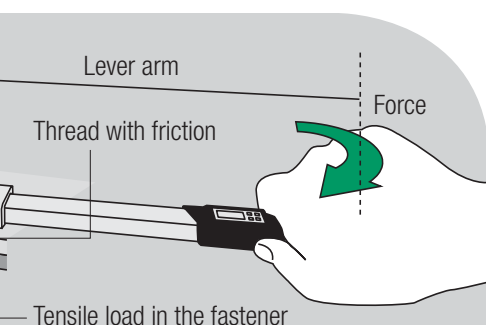
Not for sale in the USA due to Third Party patent rights. Our own patents are pending.



Ease of operation

During everyday workflows, the simple but safe operation of tools plays a crucial role. When developing the new 730D torque wrench, we placed special emphasis on this aspect.

- Rapid setting using the convenient keypad and large display
- Operator-friendly menus
- Overload protection by means of acoustic and visual signals
- Automatic conversion and display of tightening torque after a modified extension is entered
- Automatic notification of the next calibration date
- Simple calibration, simple adjustment, no readjustment or disassembly required
- With an interchangeable insert head system and QuickRelease safety lock
- All the inserts used up to now can still be used because they are compatible
- Long working cycles – using batteries or rechargeable batteries. As many as 10,000 cycles are possible
- Rapid battery or cell change without loss of data



Accuracy

During the development of the new 730D torque wrench, STAHLWILLE also developed a new generation of transducers to match it: **Sensotork**® with 100, 200 and 400 N m.

- The transducers guarantee reading accuracy of $\pm 0.5\%$ across all the measuring ranges of the 730D
- The measuring ranges of our torque wrenches and testers are exactly matched to each other
- This enables operators of our high-accuracy 730D torque wrenches to check them themselves
- All the transducers have identical connections to ensure that compatibility is ensured throughout the system
- The readings can be transferred to a PC via the USB cable – without the need for an additional power source
- The easily interchangeable transducers are equipped with a QuickRelease safety lock
- The effect of lateral forces is considerably reduced thanks to the low-profile construction, which ensures that readings are not negatively influenced



Operation

Parallel to the development of the new 730D and the matching transducers, STAHLWILLE has also designed a new series of loaders to be used in conjunction with the new **M|a|n|u|t|o|r|k|** system and with excellent characteristics. They avoid the problem of the displacement of the point of application of force, which tends to occur on virtually all loaders on the handle of the torque wrench during calibration. This usually leads to an additional uncertainty of up to 1%. If the conventional tester has a reading accuracy of $\pm 1\%$, torque wrenches with an accuracy of $\pm 4\%$ cannot be calibrated at all. Fourfold accuracy cannot be guaranteed!

- With these **M|a|n|u|t|o|r|k|** loaders the torque is applied to the pivot point of the torque wrench and not to the handle

- The lever below the test rail is actuated very accurately 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

- **M|a|n|u|t|o|r|k|** loaders are low-cost, modular tools which each user can adapt to his or her own needs

- Thanks to a low-friction linear ball bearing, the torque wrench is automatically levelled as it is placed in the unit
- This further reduces the error potential caused by possible lateral forces being inadvertently applied to the transducer
- The test attachment for torque screwdrivers can be used in combination with the **M|a|n|u|t|o|r|k|** base unit



± 0.5%

Accurate read-off across the whole range.

Check

The problem which has, until now, been central to the checking and calibration of torque wrenches has now been solved.

The new **M/a/n/u/t/o/r/k/** system records the measurement without the point of application of force being able to shift.

Thanks to a specially designed force transmission system, the mechanical loader avoids the risk of the point of force application shifting during the calibration process.

The lever below the test rail is actuated very accurately in a linear direction by the handwheel acting on a spindle. This 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. This process is virtually immune to "operator error".

Thanks to a low-friction linear ball bearing, the torque wrench is automatically levelled as it is placed in the unit. This further reduces the error potential caused by possible lateral forces being inadvertently applied to the transducer.

Since the readings are digitised inside the transducer by the integrated electronic circuitry, there can be no external interference from data cables. The tool to be calibrated is inserted in the square transducer mount which is attached to the special test attachment for torque screwdrivers, where it is held in place by the universal centre clamp. The handwheel ensures that the required force is applied in a controlled manner to the torque screwdriver.

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. 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.





Eduard Wille GmbH & Co. KG

***P.O. Box 12 01 03
42331 Wuppertal***

GERMANY

***Tel.: + 49 202 4791-0
Fax: + 49 202 4791-355***

***info@stahlwille.de
www.stahlwille.de***