

# INSPECTOR

Type 5413-5103/..

## Torque wrench

The electronic torque wrenches are hand tools to fasten and check bolted joint connections in various procedures. The measured values can be evaluated and archived using the software platforms CEUS and testXpert.

- Torque measuring range 3 N·m to 1 000 N·m
- Torque and angle of rotation control
- Yield point control
- Audit functions (static torque, release/tighten)
- Internal memory 2 GB
- Additional measurement channel for clamping force sensors

### Description

The INSPECTOR torque wrench consists of a hand grip with an integrated changeable battery, an operating unit and a measuring head (both-side rotatable over 60°) with a square change system for adaptation of the switch-over ratchet.

The operating unit consists of display and operating elements such as the power and error LED, the TFT touch display, the membrane keys and the turning wheel.

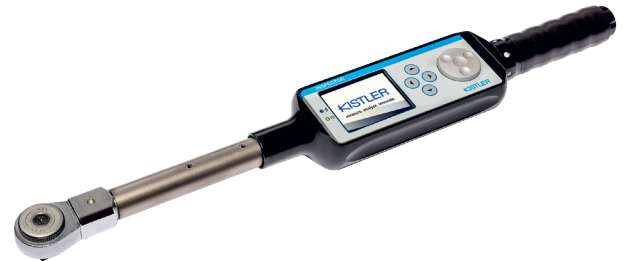
The LED of the torque wrench gives the operator feedback about the operating state, when the target value has been reached or when the measuring range has been exceeded (error LED).

The membrane keys and the turning wheel serve the navigation, setting and selection.

The operating unit also contains the interfaces for the connection of an external measurement sensor on the basis of a strain gauge, a PC and a battery charger. The INSPECTOR can optionally be fitted with a bar code scanner.

The INSPECTOR 30 to 100 are used for nominal torques of 30 N·m, 60 N·m or 100 N·m; their small dimensions make them suited for use in constricted spaces.

The INSPECTOR 200 to 1 000 are used for nominal torques of 200 N·m to 1 000 N·m.



### Application

The main applications are torque/angle of rotation measurements.

Areas of application of the torque wrench:

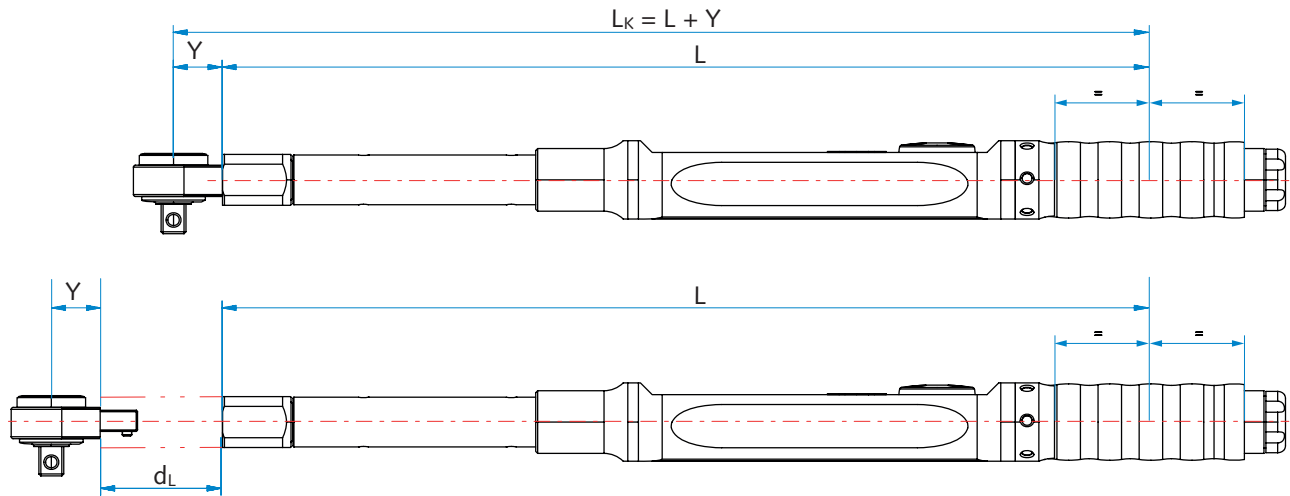
- Torque procedure:  
Tightening the connection to a pre-set torque value.
- Angle of rotation:  
Tightening the connection to a pre-set angle of rotation value, the angle of rotation is ascertained from a pre-set torque (threshold torque).
- Yield point procedure:  
Ascertaining the torque gradients  $\Delta T/\Delta \phi$  for ascertaining the material yield point.
- Static torque:  
Checks a fastened bolted joint connection. The torque required for the carry on turning of the bolted joint connection is measured immediately after the static friction has been overcome. To do so, the bolted joint is tightened by a defined angle of rotation value. This can be performed using various methods in accordance with VDI/VDE 2645 Part 3.
- Releasing/tightening:  
The fastened bolted joint is released by a certain angle of rotation and then tightened by the same angle of rotation. This procedure ascertains the torque remaining in the connection whilst still in the dynamic friction phase.

## Technical data

### Basic mechanical/electrical data for the Torque wrenches

Achievable meas. uncertainty (Torque)	Measurement uncertainty $\leq 1\%$ of displayed value (Lower limit of measuring range $M_a = 10\%$ of full range)
Achievable meas. uncertainty (Angle of rotation)	Resolution $0.1^\circ$ , Measurement uncertainty $\leq 1^\circ$ (Referred to measured value)
Additional measurement channel	16 bit resolution 3.0 VDC feed voltage external (characteristic value 2 mV/V)
Internal memory capacity	2 GB
Operating temperature range (nominal temperature range)	0 ... $40^\circ\text{C}$
Humidity	20 ... 80%, non-dewing/condensing
Housing material	aluminium/titanium
Voltage supply	2x lithium-ionen-batteries (type 18650) with integrated protective switch against short-circuit, overload and deep discharge 3.6 V, 9.36 Wh, 2 600 mAh for about 8 hours continuous operation
Reloading time	about 2 h
TFT Display	320 x 240 pixels, 16 bit colour analogue touch panel

## Technical data and dimensions



- L Load application length  
 Y Calibration dimension (plug-in tool length)  
 L<sub>K</sub> Calibration length  
 d<sub>L</sub> Extension through adapter (customer-side application)  
 Y + d<sub>L</sub> Application dimension

For the extension through adapters on the customer side, the application dimension and the corrected value must be determined.

Type 5413-5103/..	../30	../60	../100	../200	../300	../400	../600	../800	../1 000
Nominal value	3 – 30 N·m	6 – 60 N·m	10 – 100 N·m	20 – 200 N·m	30 – 300 N·m	40 – 400 N·m	60 – 600 N·m	80 – 800 N·m	100 – 1000 N·m
Display range	0.3 – 33 N·m	0.6 – 66 N·m	1 – 110 N·m	2 – 220 N·m	3 – 330 N·m	4 – 440 N·m	6 – 660 N·m	8 – 880 N·m	10 – 1100 N·m
Tool holder	9x12 mm	9x12 mm	9x12 mm	14x18 mm	14x18 mm	14x18 mm	14x18 mm	14x18 mm	22x28 mm
Calibration dimension Switch-over ratchet	17.5 mm	17.5 mm	17.5 mm	25.0 mm	25.0 mm	25.0 mm	30.0 mm	44.0 mm	153.0 mm
Length	440 mm	450 mm	450 mm	545 mm	825 mm	825 mm	1080 mm	1440 mm	1455 mm
Width	79 mm	79 mm	79 mm	79 mm	79 mm	79 mm	79 mm	79 mm	79 mm
Height	40 mm	40 mm	40 mm	40 mm	40 mm	40 mm	40 mm	40 mm	40 mm
Weight	0.9 kg	1.1 kg	1.1 kg	1.4 kg	2.0 kg	2.0 kg	2.6 kg	3.0 kg	3.3 kg

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**Scope of delivery**

INSPECTOR

 Switch-over ratchet, carrying case, battery charger,  
 two batteries, USB interface cable, user manual

**Optional components**

LED display ring

Bar code scanner

Protective cover

 Radio transmission inc. basis station (compliance with  
 EU-directive)

**Ordering key**

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**Measuring range**

3 ... 30 N·m	0030
6 ... 60 N·m	0060
10 ... 100 N·m	0100
20 ... 200 N·m	0200
30 ... 300 N·m	0300
40 ... 400 N·m	0400
60 ... 600 N·m	0600
80 ... 800 N·m	0800
100 ... 1 000 N·m	1000

**LED display ring**

no	0
yes	A

**Bar code scanner**

no	0
yes	B

**Protective cover**

no	0
yes	H

**Radio transmission inc. basis station**

no	00
WLAN 2.4 GHz	W2
WLAN 5.2 GHz	W5