
GEDORE

LTC
TORQUE TESTING BENCH TECHNOLOGY

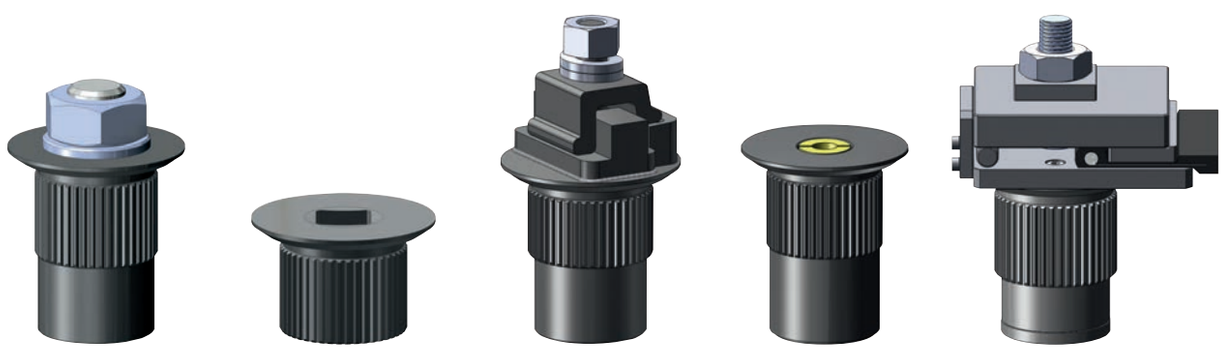
LTC

SCOPE OF DELIVERY

- DEVICE
- SOFTWARE
- OPERATING MANUAL
- FACTORY CALIBRATION CERTIFICATE FOR TORQUE SENSORS

THE TORQUE TESTING BENCH TECHNOLOGY
LTC SERIES, 100-5.000 Nm

Optional accessories - Bolt adapter



Static and dynamic torque measurements up to 5000 Nm

Static and dynamic bolting systems must be regularly checked for their torque accuracy. The Torque Check (LTC) system was developed for simple, mobile and professional dynamic torque measurement.

Torque measurement with our system

With this model you can rely on a tried-and-tested, practical measurement of your bolted cases. As in the larger LDP series the dynamic torque is determined using an original bolt. The supplied bolt adapter can be exchanged and replaced.

Basic software with comprehensive utility

The basic software included with the system has comprehensive utilities for rapid static and dynamic torque measurement in metric and imperial units. German and English are available as operating languages.
At the end of each measurement, the system signals the operator immediately whether the determined values lie within the specified tolerances or not.
The operator is constantly informed visually and numerically about the torque progress. This is particularly helpful when testing torque wrenches.

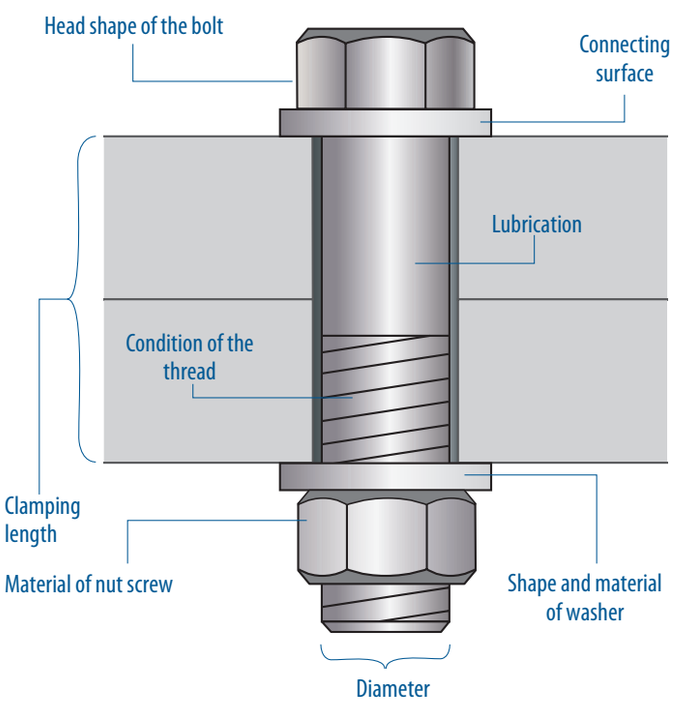
The basic software can be upgraded modularly to a complete test bench environment. So that the test bench grows from the entry model to a fully professional system together with your requirements.

The torque check is available for the following measuring ranges:

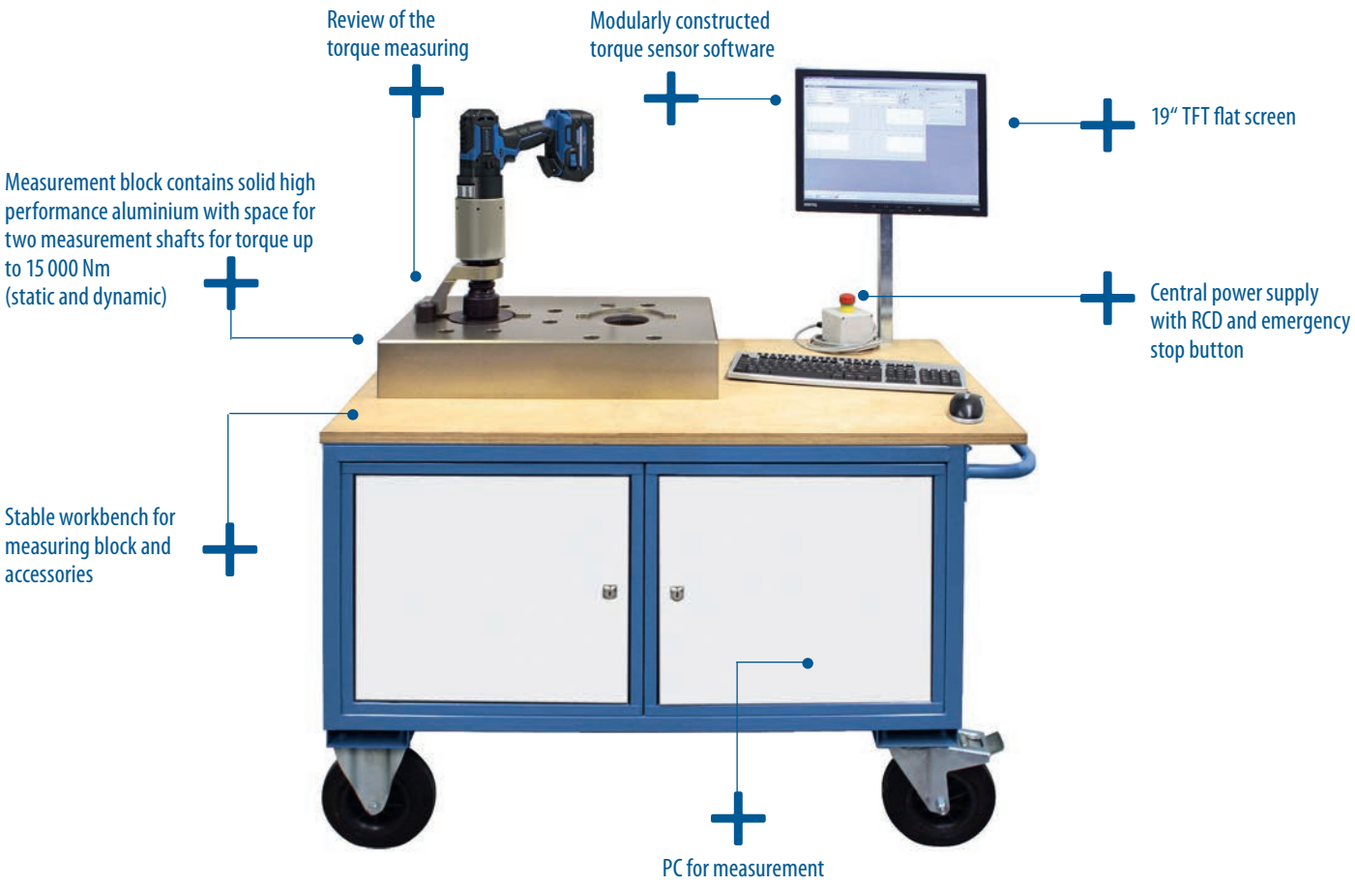
LTC-10	100–1000 Nm
LTC-30	300–3000 Nm
LTC-50	500–5000 Nm

Influencing factors of the bolt connection

The aim of every bolt tightening operation is to achieve the required clamp force that is generated between two components being connected. The clamp force is influenced by numerous factors in the torque process.
This means that the expected clamp force may not be reached in the end because other influencing factors have reduced the force. Influencing factors can be the condition of the thread, lubrication, etc.
It is therefore very important to know the bolted connection and relevant influencing factors before any bolt is tightend.
But how can the required clamp force be achieved with reproducible accuracy? The answer is: calibrate the system settings unsing original bolts.



AS WE REVIEW INSIDE:
THE TORQUE TESTING BENCH TECHNOLOGY



DYNAMIC TORQUE MEASUREMENT

f one considers the influencing factors that arise during the production of a correct bolted connection, it can be seen that the greatest influence is spread to the following factors based on the bolt itself: thread type and condition, grade, diameter, length, rotation speed – the list could be continued indefinitely.

Static and dynamic torque measurement up to 15000 Nm

The torque testing bench system takes the actual aspects of your bolting applications in practice into account as much as is feasible.
Original bolts with all the influencing factors that act on them are measured to determine the dynamic torques. The value determined during measurement is actually equivalent to the dynamic torque applied to the bolted connection. Subsequent addition of correction factors for hard or soft bolting operations is not necessary. This allows you to implement rational and error-free measurement in all application cases.

Module for different languages

Certificates in various languages are increasingly required due to the international use of bolting systems. This is no longer a problem with the language module. The languages of all previously created factory calibration certificates can be changed during measurement and afterwards. Over 15 European and Asian languages are currently available.

For this reason, there are still no recommended measurement regulations from any of the official bodies for the traceable determination of dynamic torques. Torque measurements in which the resistance of the bolt connection is simulated via mechanical brake systems or similar, don`t take into account significant influencing factors.

The modular kit

The interface between bolt and test bench is the so- called bolt adapter.
The attachment of the bolt to the bolt adapter is simple. The bolted connection can be changed at any time, even during measurements.
Special adaptations are just as easy with this system as the direct use of standard female hexagon inserts for static torque measurement of hydraulic wrenches, torque multipliers and torque wrenches.

Module for graphical evaluation

The average values of all measurement series are recorded graphically and shown on the factory calibration certificate. The torque curve is recorded up to the maximum value for hydraulic torque wrenches and manual torque multipliers.

THE FACTORY CALIBRATION CERTIFICATE

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TOOLS FOR LIFE

Factory CALIBRATION CERTIFICATE
for Battery torque wrench

Date	10.03.2018	Manufacturer	GEDORE	Bolting Adapter:
Type	LDA-22	Inspector	Max Mustermann	M20x90: II 1-3
Serial No	DA09.00107	Temperature	23,1 °C	M24x120: I 1, II 4-7
Inventory No		min. torque:	250 Nm	M30x130: I 2-4
Model Year	2018	max. torque:	2180 Nm	M36x130: I 5-7
		Tolerance	5 %	

MEASURED VALUES 1. Gear [Nm] | **EVALUATION**

Set.	1	2	3	4	5	6	7	8	9	10	Ave.	% Dev.	95% Valu.	105% Valu.	Sensor
1	860	857	854	853	860						857				
2	1407	1362	1383	1359	1392						1381				
3	1824	1837	1849	1835	1784						1826				
4	2149	2213	2208	2224	2177						2194				
5	2500	2490	2500	2478	2509						2495				
6	2777	2852	2812	2827	2823						2818				
7	3207	3237	3166	3210	3182						3200				

MEASURED VALUES 2. Gear [Nm] | **EVALUATION**

St.	1	2	3	4	5	6	7	8	9	10	Mittel	% Abw.	95% Wert	105% Wert	Sensor
1												1,11	329	363	
2												1,34	506	560	
3												1,44	595	657	
4												1,23	747	825	
5												0,97	833	921	
6												1,44	945	1044	
7												1,26	1047	1158	

Sensor data sheet (in order to their appearance): LPU: 201101171
1: Torque Sensor, Lorenz Messtechnik D-2271, SN: 102552, 15000 Nm
2: Torque Sensor, Lorenz Messtechnik D-2268, SN: 104305, 2000 Nm
All measured values in this document are executed with a regular proofed calibration equipment.
So that the lead back to ISO 9000 ff are guaranteed.

1. Secure DataMatrix Code

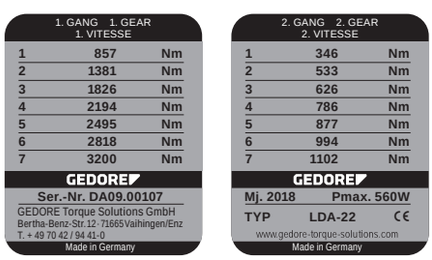
2. Individual factory calibration certificate for every planetary gear torque wrench with individual serial number for clear identification

3. Transparency and safety results from deviation data taking the efficiency into consideration

4. Various languages available on request

5. Three to five complete measurement series per torque level depending on the device type

6. The torque values are duplicated on the tool label:



Individual factory calibration certificate for all planetary gear torque wrenches in the series:
LDA/LAW, LDA/LAW Solution, LDE/LEW, LPK/LPK-X, LKV, LDB and LHD
Tested on standard or original bolts.
We recommend annual tool calibration of the devices, a new factory calibration certificate can be issued following this inspection if required.