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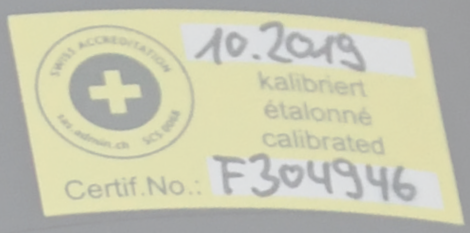
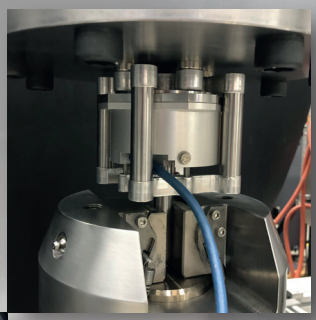
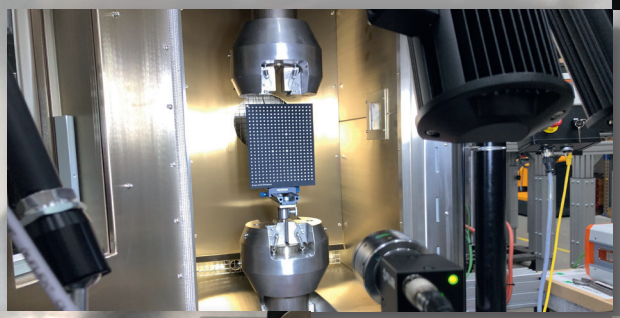
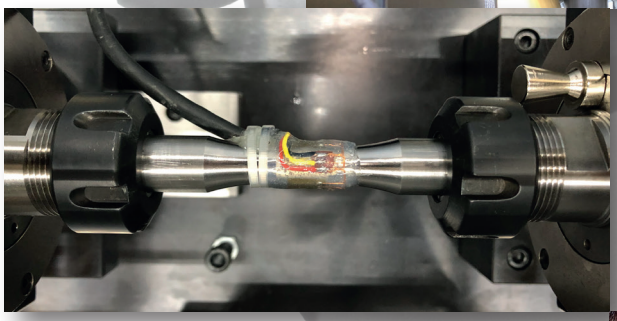


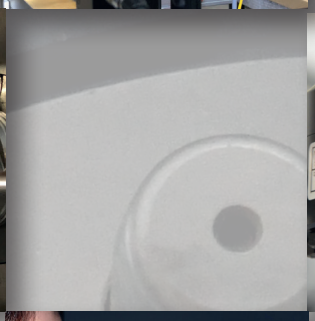
Maintenance and Calibration of Material Testing Machines

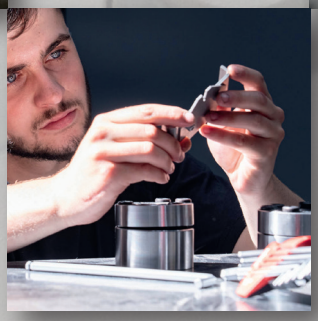
Accredited Calibration Laboratory SCS 0068 According to ISO 17025











Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Economic Affairs SECO
Swiss Accreditation Service SAS

Swiss Confederation

Based on the Accreditation and Designation Ordinance dated 17 June 1996 and on the advice of the Federal Accreditation Commission, the Swiss Accreditation Service (SAS) grants to

walter + bai ag
Calibration laboratory
Industriestrasse 4
8224 Löhningen

Period of accreditation:
20.12.2020 until 19.12.2025
(1st accreditation: 19.10.1995)

the accreditation as

Calibration laboratory for material testing machines (Measurand Force, Torque, Length, Angle, Impact, Pressure, Roughness and Hardness)

International standard: ISO/IEC 17025:2017
Swiss standard: SN EN ISO/IEC 17025:2018

3003 Berne, 11.01.2021
Swiss Accreditation Service SAS

Head of SAS
Konrad Flück

SAS is a signatory of the multilateral agreements of the European co-operation for Accreditation (EA) for the fields of testing, calibration, inspection and certification of management systems, certification of personnel and certification of products, processes and services, of the International Accreditation Forum (IAF) for the fields of certification of management systems and certification of products, processes and services and of the International Laboratory Accreditation Cooperation (ILAC) for the fields of testing and calibration.

ISO 17025

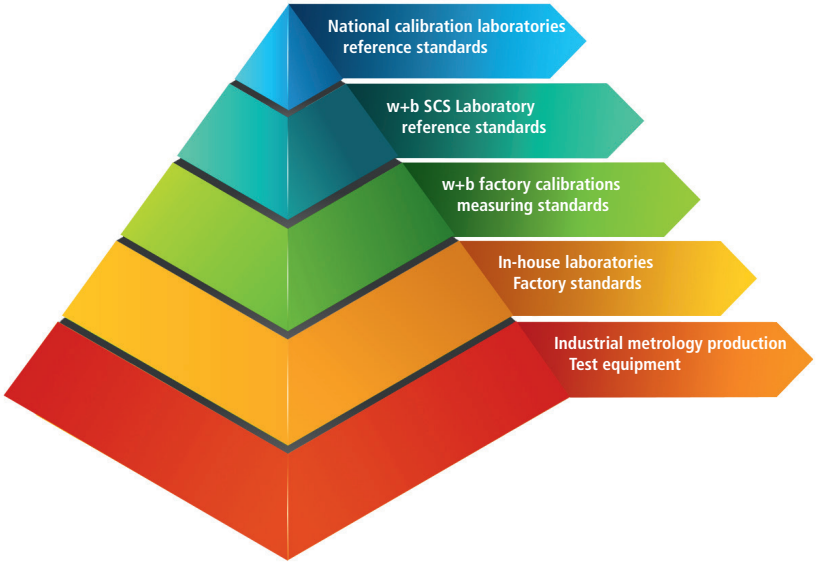
Maintenance and Calibration of Material Testing Machines

by the accredited w+b Calibration Laboratory

Our calibration laboratory, accredited according to ISO / IEC 17025, carries out adjustments and traceable calibrations of static material testing machines, dynamic test systems, extensometers, pendulum impact testers, hardness testers and other measuring devices at your site or calibrates transducers in our laboratory.
Our specialists also take on the maintenance and service work on your material testing machines and systems.

The regular, periodic inspection and calibration of your testing equipment guarantees standard inspection equipment monitoring and the standard conformity of your quality assurance or research.

With over 50 years of experience in testing machine construction, calibration of testing machines and a calibration laboratory that has been SCS-accredited since 1995, we offer proven expertise in the maintenance and calibration of material testing machines and devices. The accredited calibrations carried out by us are internationally recognized through the mutual recognition of national accreditation authorities within the framework of the ILAC agreement.



We are accredited for force, length, hardness, energy (mechanical work), torque, pressure, flatness and roughness and in addition to calibration works at your laboratory we also carry out calibrations in our factory.

In addition to our own testing machines, testing machines from all other manufacturers are also calibrated.

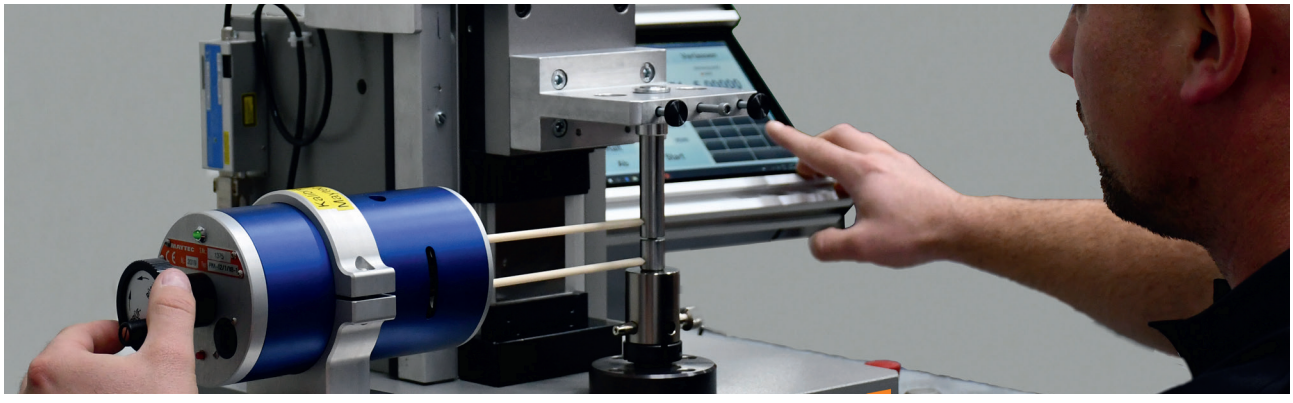
We are an accredited calibration laboratory for:

- Force – tension and compression
- Length
- Crosshead / piston speed
- Energy - mechanical work
- Torque
- Angle of rotation
- Pressure - liquid
- Hardness
- Flatness
- Roughness

SCS 0068

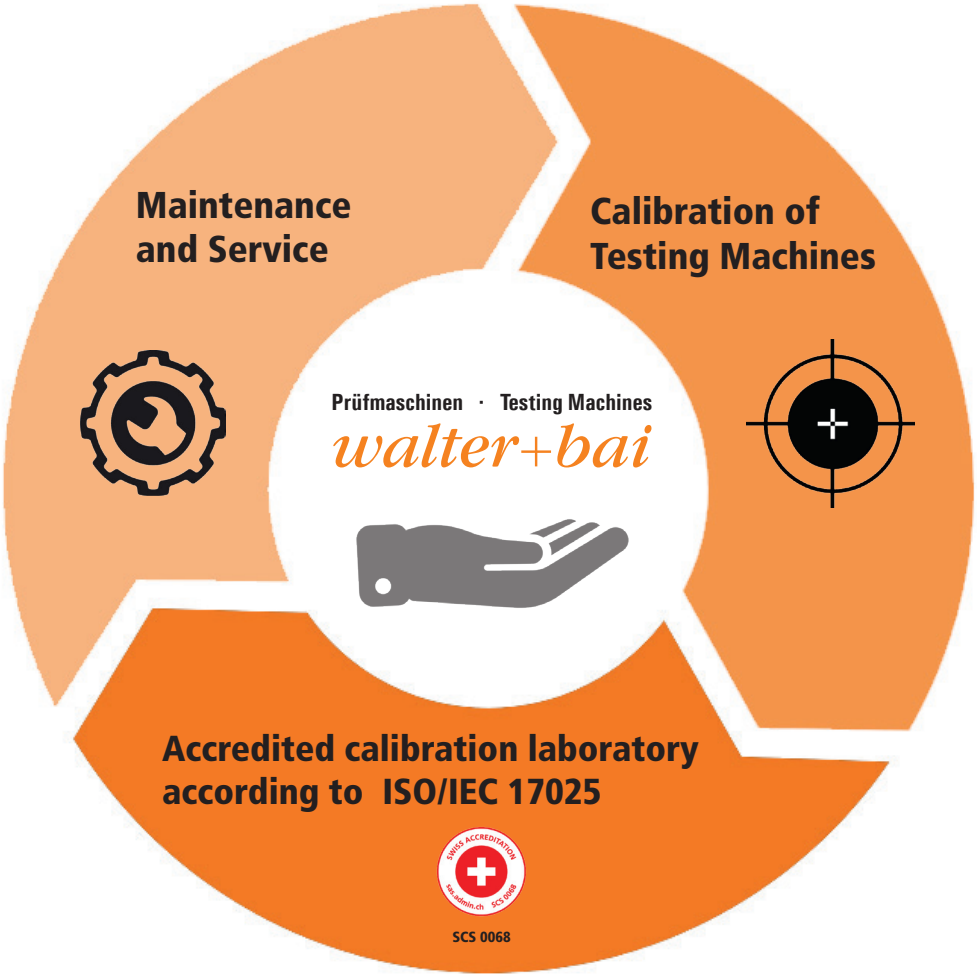
We offer:

- On-site calibration of all brands
- Additional maintenance and repair work
- In-house calibrations in our factory
- Free hotline
- Machine inspections
- Machine relocations and recommissioning
- Software updates and maintenance contracts
- Training in your laboratory or at our factory
- Modernisations / Upgrades and Updates



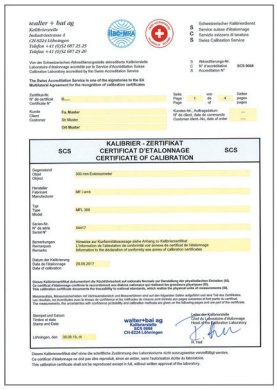
Everything From a Single Source

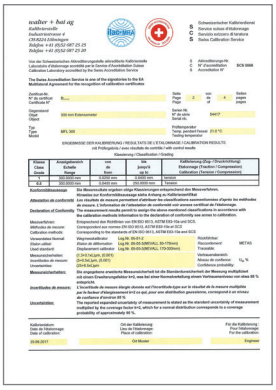
Thanks to our decades of experience in testing machine construction and calibrations, we can offer you an all-round service for your testing machines and systems. This minimizes failures and ensures compliance with standards. You can save costs by combining calibration of your test system with maintenance and service work. We carry out these services for our own testing machines as well as for third-party products. We also offer preventive maintenance, on-site repairs, overhauls and repairs in our factory, machine relocations and recommissioning, spare parts, software updates & upgrades, training and modernizations.



w+b Calibration Service

Our services are designed to ensure that your test system meets or exceeds applicable standards.
Thanks to a large number of traceable calibration equipment, we are capable of calibrating testing machines in the micro range up to high-load testing machines.



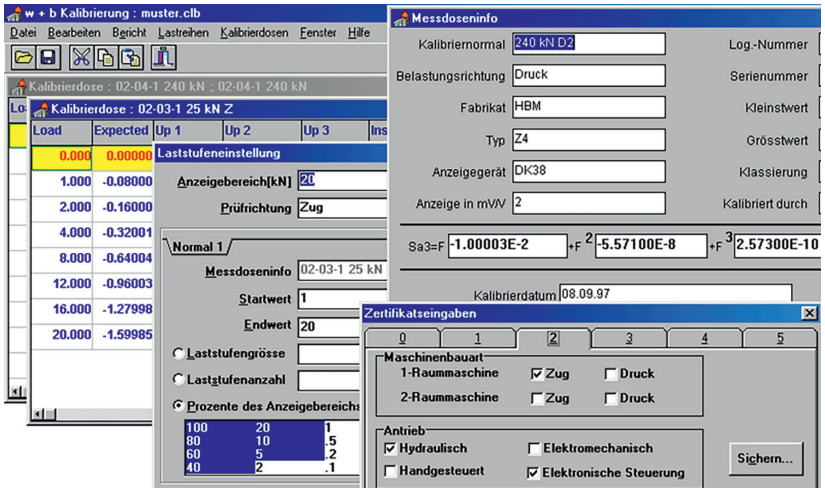


w+b Maintenance and Calibration

Our calibration specialists are trained accordingly and have high-precision equipment, data acquisition devices and extensive evaluation software for a productive and standard-compliant calibration, logging and the creation of certificates.
With our calibration software "Kalib", data is automatically recorded, the measurement uncertainty is identified and the results are calculated and displayed in accordance with the requirements of ISO and ASTM.

Adjustment and calibration

The terms adjustment and calibration are often used synonymously, but have significant differences.
The adjustment is carried out by our technicians by intervening directly in the measuring chain to minimize measurement deviations. Any adjustment is usually made at the beginning of a calibration if measurement deviations are found.
During calibration, the measuring chain (display) of the tested material testing machine (measuring instrument) is compared with the measuring display of a traceable standard. The measurement standards used are reference transducers which can be traced back to primary standards.

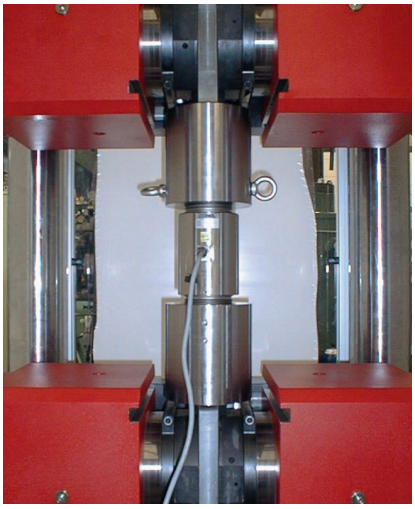


Force calibration of material and material testing machines and sensors up to 5000 kN

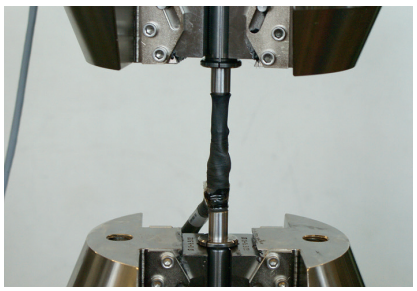
Force calibration according to ISO 7500-1 and ASTM E4
Calibration of tensile and compression testing machines.

Force calibration according to ISO 7500-2
Calibration of creep testing machine in tensile direction.

Strain Cylinder Test for concrete compression testing machines according to ISO EN 12390-4 / DIN 51302-2
The strain cylinder test on concrete compression testing machines is carried out to verify the self-alignment of the upper machine platen and the component parts of the machine in accordance with DIN 51302-2. This German standard provides additional information on the verification of concrete testing machines for the European standard DIN EN 12390-4. For the reproducibility of the concrete compression test results, the flatness of the force application surfaces (compression platens) and the centric position, in addition to perfect functioning of the spherical seated compression platen are of critical importance. Testing machines that comply with the strain cylinder test requirements have generally recognized better standard deviations.



Alignment Verification according to ASTM E1012 or ISO 7500-1



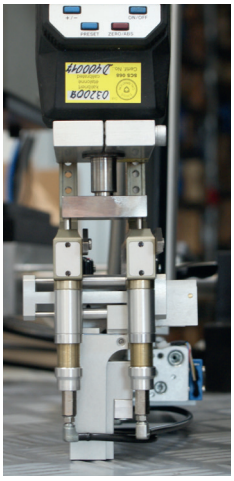
We offer the alignment verification based on ASTM E1012 or ISO 7500-1.
The specimen bending can be determined by use of a strain gauged alignment rod for the verification of machine and load string alignment or use of a strain gauged typical test piece.

We are also offering beside of machines alignment fixtures the related strain gauged specimens with alignment electronics and software for the measurement / verification of the alignment.

w+b Maintenance and Calibration

Length calibration of extensometers, crosshead travel and piston stroke

Calibration of extensometers for testing with uniaxial stress according to ISO 9513 or ASTM E83
Calibration and classification of extensometer systems that indicate or record values to either tensile or compressive strain. It includes clip-on extensometer, semi-, or fully automatic units, crack opening displacement gauges (COD) according to ASTM E399, ASTM E561 etc,, optical extensometer systems, high temperature units and others.



Calibration of axial displacement systems according to ISO 9513 or ASTM E2309 / E2309M
We calibrate the axial displacement system of electromechanical and servohydraulic testing machines. In case of electromechanical testing machines the crosshead travel or central spindle stroke is calibrated whereas the piston (actuator) stroke is calibrated when the machine is servohydraulic driven.

Crosshead speed or piston speed calibration (verification) of material testing machines according to ASTM E 2658
It covers the calibration (verification) of the speed application and measuring system. It includes crosshead speed, electromechanical spindle speed or piston (actuator) speed of servohydraulic testing machines..

Energy (mechanical work): calibration of pendulum impact testers

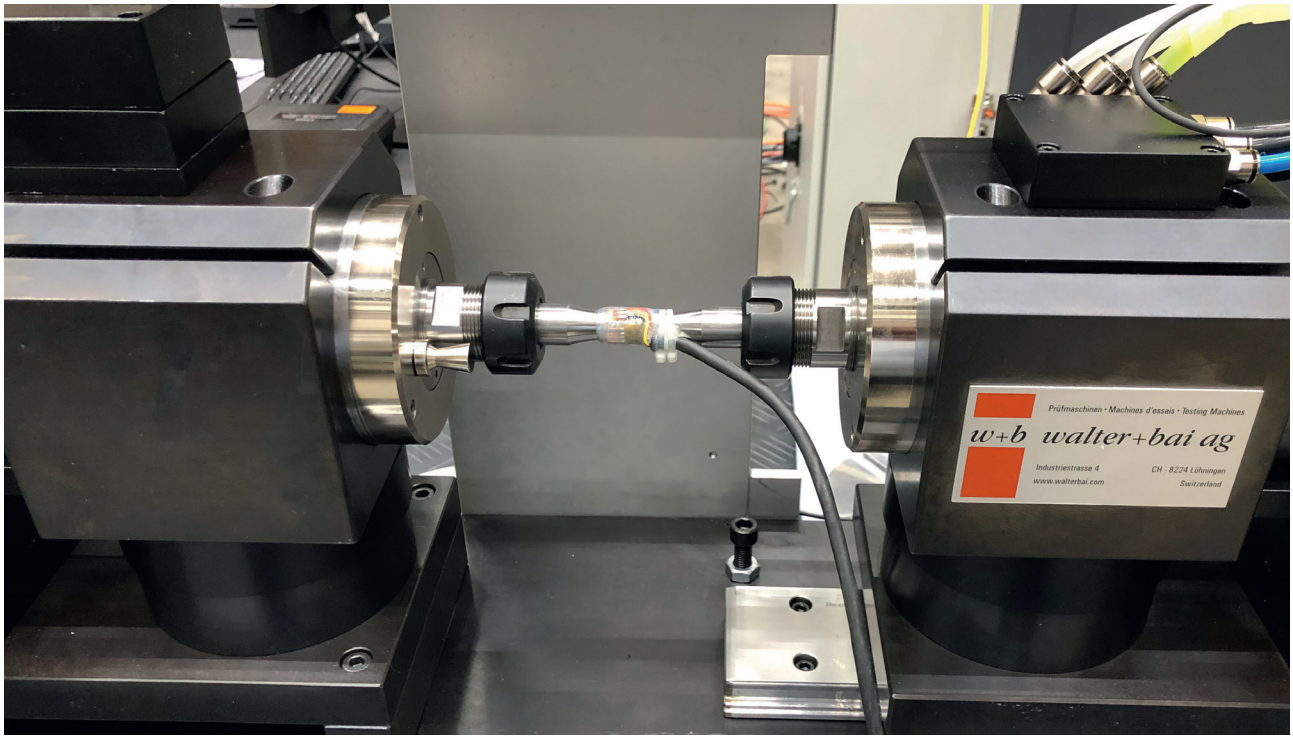
Calibration and verification of pendulum impact testers according to ISO 148-2 or ASTM E23
We calibrate the mechanical work on pendulum impact testers and impact devices in accordance with ISO 148-2 or ASTM E23. The calibration is carried out by direct verification. An additional indirect verification with reference samples can also be carried out.

Calibration and checking of pendulum impact testers according to ISO 13802
We calibrate the mechanical work on plastic pendulum impact testers according to ISO 13802.

Calibration of instrumented strikers according to ISO 14556 or ASTM E 2298
We carry out force calibrations of instrumented strikers according to ISO 14556 or strikers according to ASTM E2298 of pendulum impact testers.

Calibration of rotary bending fatigue testing machines according to ISO 1143 and / or DIN 50113

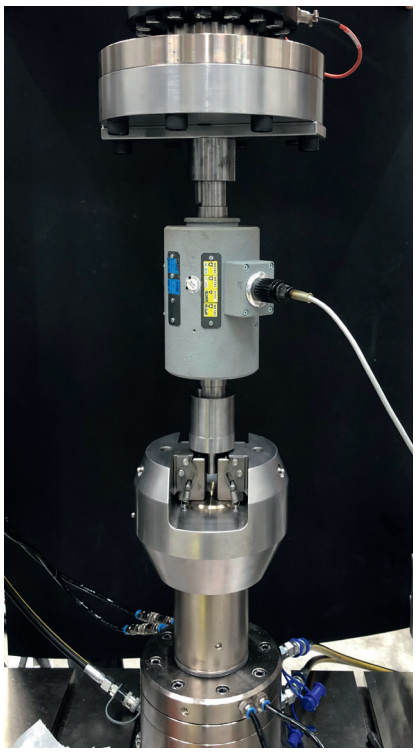
We calibrate rotary bending fatigue testing machines according to ISO 1143 and carry out calibrations according to DIN 50113 on machines with four-point loading (constant bending moment over the specimen)

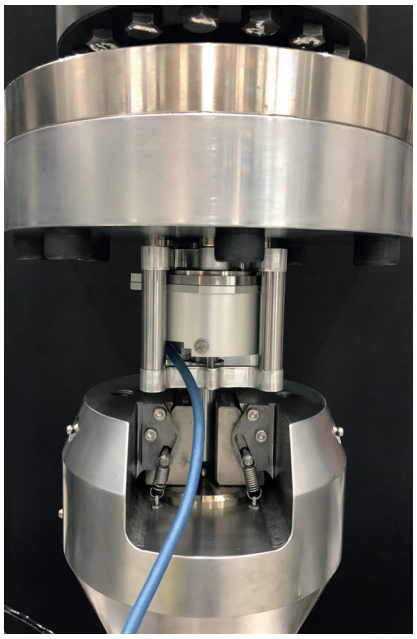


Torque calibration

Torque calibration of testing machines and devices in accordance with ASTM E2624, ISO 51309 and based on ISO 7500-1

We calibrate torsion and tension-torsion testing machines that apply and display a torque. Torque testing systems are used in a variety of ways in many industries. They can be used in research laboratories to measure material characteristics or in production line to qualify a product. Regardless of the purpose of the machine, the user needs to know how much torque is being applied and whether the accuracy of the torque value is traceable.





Angle of rotary transducers calibration

Calibration of angle transducers that are integrated into test system in based on ISO 9513.

Rotary encoders of electromechanical or servohydraulic testing machines can be verified based on EN ISO 9513.

Pressure (bar overpressure)

Calibration of internal pressure testing machines, pressure sensors and pressure measuring devices according to DKD-R6-1, EN 837-1, ISO 7500-1 and ASTM E4

Hardness

We are accredited to calibrate hardness testing machines for Brinell hardness, Rockwell hardness and Vickers hardness.

We calibrate according to the following international standards:

Brinell-hardness: ISO 6506-2 and ASTM E10-10
Rockwell-Hardness: ISO 6508-2 and ASTM E18-08
Vickers-hardness: ISO 6507-2, ASTM E92-82 and ASTM E384

Roughness Ra
We are accredited for roughness measurements on pressure plates and intermediate plates of concrete testing machines.

Calibration item	Calibration according to norm	Calibration range	Measurement uncertainty	Reference
Force accredited after ISO 17025 Calibration of material testing machines / material testing machines Calibration of load cells, dynamometers, spring scales				
Force calibration in tensile direction	ISO 7500-1 ISO 7500-2 ASTM E4	2 N …<200 N	0.0002 N	Calibration with load pieces
Force calibration in tensile direction	ISO 7500-1 ISO 7500-2 ASTM E4	20 N…200 N	0.12%	Calibration with reference standards (class 0.5, ISO 376 & ASTM E74-00)
Force calibration in tensile direction	ISO 7500-1 ISO 7500-2 ASTM E4	200 N…240 kN	0.06%	Calibration with reference standards (class 0.5, ISO 376 & ASTM E74-00)
Force calibration in tensile direction	ISO 7500-1 ISO 7500-2 ASTM E4	20 kN…1500 kN	0.12%	Calibration with reference standards (class 0.5, ISO 376 & ASTM E74-00)
Force calibration in compression direction	ISO 7500-1 ASTM E4	2 N …<200 N	0.0002 N	Calibration with load pieces
Force calibration in compression direction	ISO 7500-1 ASTM E4	20 N…200 N	0.12%	Calibration with reference standards (class 0.5, ISO 376 & ASTM E74-00)
Force calibration in compression direction	ISO 7500-1 ASTM E4	200 N…240 kN	0.06%	Calibration with reference standards (class 0.5, ISO 376 & ASTM E74-00)
Force calibration in compression direction	ISO 7500-1 ASTM E4	20 kN…1500 kN	0.12%	Calibration with reference standards (class 0.5, ISO 376 & ASTM E74-00)
Force calibration in compression direction	ISO 7500-1 ASTM E4	400 kN…5000 kN	0.12%	Calibration with reference standards (class 0.5, ISO 376 & ASTM E74-00)
Strain cylinder test (self-alignment) for concrete compression testing machines	ISO 7500-1 ASTM E4	Up to 2000 kN		Calibration with reference standards (class 0.5, ISO 376) ISO EN 12390-4 / DIN 51302-2
Alignment verification with factory calibration or ISO documentation Electronic measurement of the bending strain of materials testing machines with strain gauged rod				
Alignment verification of material testing machines	ASTM E1012 Nadcap AC7101 Nadcap AC7122	0-600 kN		Calibration with Strain-gauged alignment rod or test piece
Verification of dynamic force calibration and factory calibration or ISO documentation Verification of the dynamic force with DMS-applied measuring standards				
Dynamic force on testing machines	ASTM E467 DKD-R 3-10 MIL STD-1312B	0-600 kN		Calibration with strain-gauged rod
Length accredited to ISO 17025 Calibration of materials testing machines Calibration of extensometers, piston stroke / crosshead position system, dial gauges and other length measuring devices				
Crosshead travel piston stroke	ISO 9513 ASTM E83	0-1000 mm	Depending on the resolution (50 + 1 x L) µm to (12 + 0.2 x L µm	Calibration with reference calibrator
Extensometers	ISO 9513 ASTM E83	0-50 mm	Depending on the resolution (0.2 + 0.1xL) µm to (1.2 + 0.1xL) µm	Calibration with reference calibrator
Piston stroke transducer Crosshead travel Displacement sensors	ISO 9513 ASTM E83	0-60 mm	Depending on the resolution (1.2 + 0.1xL) µm to (10 + 0.1 x L µm	Calibration with reference calibrator

Calibration item	Calibration according to norm	Calibration range	Measurement uncertainty	Reference
Marking devices (Linier apparatus) for tensile specimens	ISO 9513 ASTM E83	200 mm	0.05 mm / 0.250 = 95%	Calibration
Vibrating tables for compressing fresh concrete	EN 12390-2 ISO 9513 ASTM E38		0 bis 2 mm	Calibration with vibration measuring device
Mechanical work accredited according to ISO 17025 Calibration of pendulum impact testers and impact devices				
Pendulum impact testers	ISO 148-2 ASTM E23	Up to 900 Joule	Deviation limits according to the procedural standard	Calibration with reference standards (class 0.5 according to ISO 376)
Calibration of DMS-applied hammer blades Force accredited according to ISO 17025 Calibration of instrumented hammer fins according to ISO 14556 or ASTM E 2298				
ISO hammer cutting, ASTM hammer cutting of pendulum impact machines	ISO 7500-1 Internal work instruction	0-100 kN	0.06%	Calibration with reference standards (class 0.5, ISO 376)
Torque accredited according to ISO 17025 Calibration of torque and torsion testing machines Calibration of torque sensors & torque measuring shafts				
Test systems, calibration in left and right direction	Based on ISO 7500-1, ASTM E2624 DIN 51309 internal work instruction	2.5 N bis 500 N 2 N bis 1000 N	0.3% 0.15	Static process quasi-static process Calibration with reference standards
Angle calibration and factory calibration or ISO documentation Calibration on torsion testing machines and rotation sensors (rotation angle sensors)				
Test systems, calibration in left and right direction	Based on ISO 9513 internal work instruction	0° bis 360°		Calibration with reference standards
Pressure accredited to ISO 17025 Calibration of internal pressure testing machines, pressure sensors, pressure measuring devices				
Internal pressure testing systems, testing machines, pressure sensors, pressure measuring devices	DKD-R6-1 EN837-1 ISO 7500-1 ASTM E4	0 up to 20 bar 20 up to <500 bar 500 up to 5000 bar	0.3% jedoch nicht <0.002 bar 0.2% 0.3%	Calibration with reference standards
Hardness accredited to ISO 17025 Calibration of hardness testing machines according to Brinell, Rockwell and Vickers				
Brinell hardness hardening method HBW	ISO 6506-2 ASTM E10-10	HBW	Deviation limits according to the procedural standard	Hardness comparison plates according to ISO 6506-3 / ASTM E10-10
Rockwell hardness HRB, HRC	ISO 6508-2 ASTM E18-08	HRB HRC	Deviation limits according to the procedural standard	Hardness comparison plates according to ISO 6506-3 / ASTM E18-08
Vickers hardness	ISO 6507-2 ASTM E92-82/E384	HV0.1, HV0.2, HV0.3 HV1, HV5, HV10, HV20, HV50, HV100	A Deviation limits according to the procedural standard	Hardness comparison plates according to ISO 6507-3 / ASTM E92-82 / E384
Roughness Ra accredited to ISO 17025 Calibration of pressure plates, mounting plates of testing machines				
Roughness of pressure plates and intermediate plates of concrete pressure testing machines	EN 12390-4	HBW	25%	Digital roughness measuring device
Verification of flatness with factory calibration or ISO documentation Flatness of pressure plates and intermediate plates of concrete compression testing machines				
Verification with flatness / straightness measuring system	EN 12390-4 EN 12390-1 attachement B			

Calibration of rotary bending testing machines according to the 4-point bending stress, accredited according to ISO 17025, with factory calibration or ISO documentation				
Calibration of weights (accredited according to ISO 17025	ISO 7500-1 ASTM E4 ISO 1143	1 N up to 200 N		Calibration with reference standards (class 0.5, ISO 376 & ASTM E74-00)
Calibration of the load cell (accredited according to ISO 17025	ISO 7500-1 ASTM E4 ISO 1143	1 N up to 500 N		Calibration with reference standards (class 0.5, ISO 376 & ASTM E74-00)
Verification of the bending stress DIN 50113: 2018 in positive and negative stress direction	ISO 7500-1 ASTM E4 ISO 1143	1 Nm up to 200 Nm		Verification with DMS-applied measuring standards

Maintenance and service work
Regular maintenance of your system minimizes failures and guarantees safe and trouble-free operation of your testing machine. A failure of your test equipment can lead to high costs and inconvenience for you and your customers and clients.

Service work in the course of calibration
Our specialists can also carry out maintenance and service work as a part of the calibration of your test system. You can save costs by combining maintenance, service and calibration work. Maintenance work that can be carried out during calibration are for example filter change, oil change, flushing of your system, checking fill levels, minor repairs, eliminating leaks, checking settings, etc.

Preventive maintenance
Preventive maintenance can be carried out at a time that suits you. This means that your processes are only interrupted to a minimum and at a time that suits you. Standard maintenance activities and maintenance activities adapted to your test system are carried out. Defects communicated by you in advance can also be eliminated, components can be replaced preventively or readjustments can be carried out.

On-site repairs
Our qualified and experienced technicians are at your disposal at short notice if an unforeseen repair is necessary. Thanks to a large stock of spare parts, we are usually able to send required spare parts at a short notice or install them on site. We strive to support your test system for as long as you use it. If this is no longer technically possible or no longer economically viable, we can offer modernizations or replacement devices.

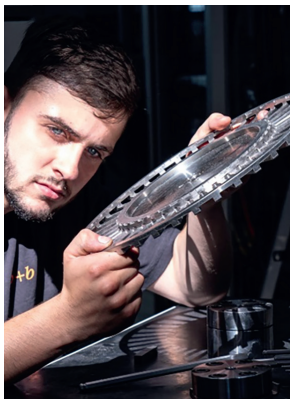
Replacement parts
Thanks to a large inventory of spare parts, we can minimize downtime for your test system or accelerate repairs.
We have common components such as cutting edges, clamping jaws filter elements, temperature sensors etc. in stock and can usually be delivered at short notice.

Machine relocation / change of location
We support you when you move the location of your testing machines or systems. We offer a range of installation and commissioning services to ensure that the machine relocation works perfectly and that testing operations can be restarted moothly.Mechanical and electronic dismantling work, recommissioning and system tests, calibration and training are often necessary until your test system is available again at the new location.

w+b Maintenance and Calibration

Software Updates & Upgrades

Our software is constantly being expanded.
New functions, new applications, new or updated standards and standard tests, updates of new operating systems and more are available for updates and upgrades.
Our software engineers also implement customer-specific software adjustments and integration into higher-level systems according to your specifications.
Our system technicians are available to assist you with questions, the creation of complex test procedures or faults by phone or online via TeamViewer.



Training

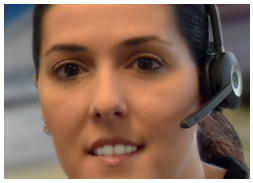
Do you have new employees or do you want to expand your employees' existing know-how? We offer on-site training, online training or training in our factory around to expand the knowledge of your employees. The training by our specialists provides the necessary practical and theoretical knowledge for working economically with the test software and the associated testing machine. The training conveys or improves the understanding of the test system and application software, increases efficiency, makes work easier or enables you to create even more complex test sequences.

Overhauls and repairs in our factory

If you want to have your test system or its components such as hydraulic supply, clamping tools or fixtures etc. overhauled as a preventive measure, it can be done in our factory. Repairs that are not possible in your laboratory can be carried out in our factory. We overhaul or repair everything from individual components to assemblies to entire test systems in our factory. A downstream control and functional operation is also part of an overhaul or repair in our factory.

Modernisations

With over 50 years of experience, we modernize material testing machines regardless of the manufacturer and whether the Testing machine is driven electromechanically or servohydraulically. With a modernization, you bring your existing test system back to the current state of technology. A modernization usually includes upgrading to an up-to-date control system with software, which usually gives you a powerful system at a fraction of the cost of a new machine. We offer different levels of modernization, from replacing the control system to completely overhauling the testing machine.



Hotline und customer support

w + b offers free telephone support for any questions related to the use of our testing machines, application questions or troubleshooting. Together with the operating instructions supplied by us, over 90% of the malfunctions that occur can be resolved quickly and without the use of one of our service technicians, and saves therefore costs.

walter+bai

walter + bai ag
Testing Machines

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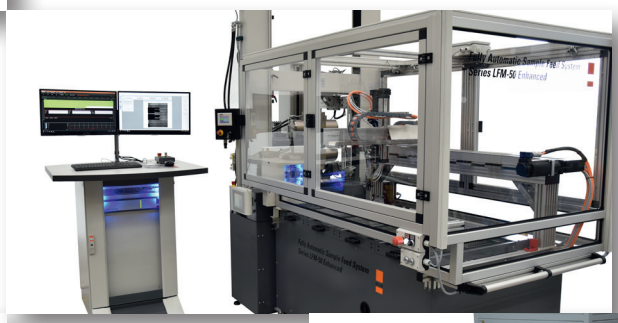
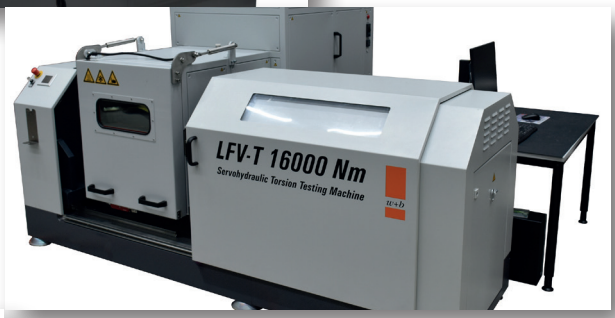
info@walterbai.com, www.walterbai.com

- Static universal testing machines
- Electromechanically or servo-hydraulically driven Dynamic test systems for fatigue tests
- Torsion testing machines, rotating bending testing machines, pendulum impact testers, internal pressure testing systems
- Customized testing machines, modernization of existing machines Troubleshooting





- Supplies for material testing including digital controllers, application software, hydraulic power units, clamping heads and devices, high-temperature furnaces and climatic chambers, etc.
- After-Sale Service at Customers Laboratory
- Recognized calibration of testing machines