

Electromechanical Torsion Testing Machines Series LFM-T up to 500 Nm

Torsion tests can be carried out on most materials, using standards specimens, to determine mechanical properties such as modulus of elasticity in shear, yield shear strength, ultimate shear strength, modulus of rupture in shear, and ductility. Further tests can also be carried out on full-size parts (shafts, axles, etc.) and structures (beams, frames etc.) to determine their response to torsional loading.

Torsion Tests are most frequently carried out on prismatic bars or circular cross section by applying a torsional moment about the longitudinal axis. The shear stress versus shear strain curve can be determined from simultaneous measurements of the torque and angle of twist of the test specimen over a predetermined gage length.

w+b offers a full range of torsion testing machines from table-top electromechanical standard machine (LFM-T Series) to servohydraulic fatigue rated systems (LFV-T Series).

The horizontal electromechanical torsion testing machines series LFM-T are designed for the determination of mechanical properties and the effect of torque on materials, engineering parts and components.

Due to the modular structure of the test systems, all models can be configured and equipped with a variety of sample holders, testers, temperature control and other accessories.

The systems can be used for creep tests, rapid, cyclic or alternating loading in close loop control. To the existing channels of measurement and control other such as torque, torsion angle, and sample deformation are available.

Additional external measurement and control channels can be connected both physical and virtual ones.



Key Features

- Very stiff frame at max. applied torque
- Rigid base plate with mounted ball rail guide and movable support with torque sensor and flange for clamping fixtures
- The movable support with clamps to hold it in position
- Scale with horizontal attachment to the ball rail guide
- Adjustable end-stop with damping
- Torsion via a maintenance-free, digitally controlled, highly dynamic AC servomotor with low backlash servo-reduction gear
- Machine with servo-reduction gear for a high mechanical resolution and control accuracy even with slow torque speeds
- Torsion electric drive is fully covered and protected
- Weight loading device for graded weights in tensile direction and (optionally) in compression direction
- Working space with protective device and electric switch
- High Resolution, incremental (digital) angle measuring system
- Machine is protected against overload

- Durable and hardwearing paint
- Use of high-quality components and those from reputable manufacturers
- Eye rings for lifting machine during transportation are supplied
- Emergency stop is installed directly on the machine

System Configuration

- Rigid machine frame and maintenance-free AC servo motor
- Latest digital control electronics with self-identification transducer coding and high data sampling / control loop rate
- Real-time processing of all channels, specially designed for materials testing in static mode
- Precise torque sensor
- Powerful and user-friendly «DION» Software
- Wide range of available clamping fixtures, deformation measuring devices, high-temperature furnaces and many others required for testing

Reliable & Durable

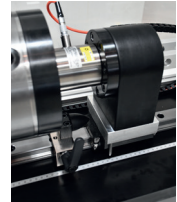
w+b LFM Series combines proven load-frame design available in numerous high-stiffness configurations using high quality components and assemblies coupled with a generous dimensioning.

Stiff & Precision Guided

These testing machines are well suited for materials including those with high rigidity. The frame design assures low frame deformation and good specimen alignment.

Accurate

The LFM Series Universal Testing Machines are equipped with high accurate Torque Transducers providing exceptional measurement accuracy combined with ultra-high-speed synchronized data acquisition. All transducer feature Transducer Electronic Data Sheets for automatic detection of connected transducers.



Versatile

The LFM series can be configured with a variety of grips & fixtures, extensometers, environmental simulation accessories and other components to meet the exacting test needs from quality control to research and development.

Latest Drive Technology

The LFM Series Test Systems are closed loop controlled through the latest high-resolution, high-speed digital control system **PCS8000**. The **PCS8000** ultra-high-speed closed loop control and data acquisition rate on all channels combined with 24-bit high resolution transducer conditioning rate is achieved by a 64-bit processor running at 1 GHz.



Advanced Closed-Loop Control

As control channel available are any connected inputs as well as virtual (calculated) channels that might open many new opportunities to your application. The versatile concept of the **PCS8000** is based on latest technology and supports applications with virtually no limits.



Operator Safety

Our LFM series of test systems fully comply with the safety requirements of the EC Machinery Directive and are supplied with the related EC Declaration.

Specimen & System Safety

Specimen Protect function prevents your specimen from being damaged during setup and gripping. The LFM Test Systems are protected against overload and provide the ability to set limits for load, crosshead travel, strain or any other connected transducer preventing damage to your system, load cell and grip or fixtures. Mechanical end-stops and adjustable travel limits stop the crosshead at set points.

Machine Safety

Provides highest level of machine safety including overload protection of the frame, overload protection of the load cell, two-channel safety circuit according to the machinery directive.

Configurable & Extendable

The modular design enables us to adapt these tests systems to virtually any of your requirements. Configure your test system to meet your unique needs of today and extend it in the future when your test needs would change.

Option for Axial Pre-loading (tension) of Specimens.

Some standards, including ISO 7800 requires that for wire diameters up to 10 mm a constant tension load, up to 2% of the tensile strength, is applied.

This option includes the loading mechanism and set of weights to apply the axial pre-load.

Option for Axial Pre-loading (compression) of Specimens.

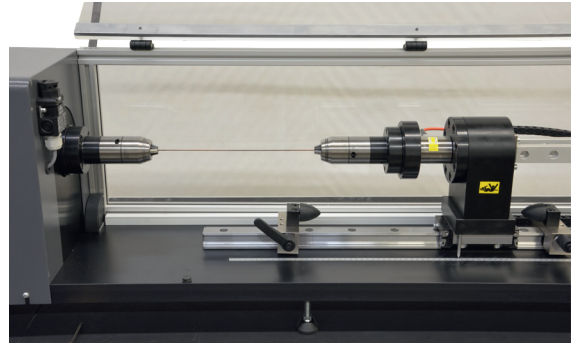
This option is available as addition to the tension pre-loading accessories and allows to apply additional compressive pre-load.



w+b Materials Testing Systems

Additional Torque Transducers

The universal flange allows to add additional, smaller torque transducer for increase measuring accuracy of low torque specimens. The additional transducers can be mounted onto the universal flange.



Gripping Systems

We are offering a wide range of different gripping system which can be mounted onto the universal flanges.

Chuck Gripping Systems

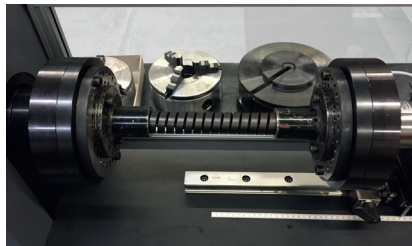
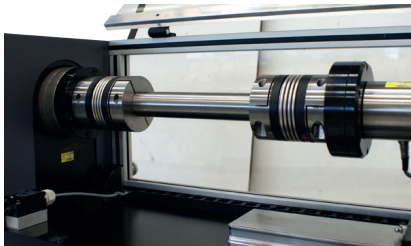
These universal drill chuck grips are available in diverse executions as keyed or keyless models. They are well suited to hold round, hex or triangular specimens. For rectangular and square specimen 4-jaw chucks are available. The chuck grips are mounted to the output shaft and / or torque transducer of the torsion machine. The jaws of these grips extend well beyond the chuck nose for easy specimen clamping as wires, cables, cylindrical specimens and others. Keyless operation chuck grips are commonly used for smaller specimens with low torques as wires, cords, cables etc.



Gripping System with Clamping Hub

This torsional rigid clamping provides accurate, backlash-free clamping and compensates lateral, axial and angular misalignment with low restoring forces. The operation is quick and easy.

Any imbalance of the clamping hubs is compensated for by balancing bores located on the inside of the hub. With a single radial clamping screw per hub ISO 4762.



Bespoken Gripping Systems

Testing of components or finished goods often requires tailor-made grips. We will offer you the suitable grips or fixtures to link your product and testing needs and our LFM-T test system.

High Temperature Accessories for LFM-T

Our Torsion Testing Machines are beside of room temperature testing also well suited to conduct tests at elevated temperature in air. Depending on specimen dimensions and required temperature range we are offering different heating and clamping solutions. dimensions and required temperature range we are offering different heating and clamping solutions.

