Fatigue Strength Testing Machines
Dynamic and Fatigue Testing Systems

Zwick offers the most comprehensive selection of drive technology for dynamic testing.

Electro-mechanical testing actuators
High test speed, precise control, simple handling For higher amplitudes and lower frequencies

Linear motor testing systems
The clean solution for test loads up to 10kN

Vibrophores
High testing frequencies for metal components and specimens with amplitudes <6mm

Servo-hydraulic testing machines
The all-rounder for maximum flexibility in everyday testing
Dynamic and Fatigue Testing Systems

One testing system for dynamic and quasi-static tests. testXpert II for static tests and testXpert Research for dynamic tests.
Servo-hydraulic testing machines

Zwick offers the right solution for uni- and multi-axial tests on components and structures.

SEB specimens  Rail mounting system  Adhesive bonds  Rubber-metal  Steel/high temp.
Disc spring testing  Shock absorbing mats  Damper  CT specimens  Steel/corrosion
Servo-hydraulic testing machines

Zwick offers standard testing machines and systems for 10-2.500 kN for a range of applications.

HA

HB - (selected models available with torsion)

HC and HC compact - (selected models available with torsion)
Servo-hydraulic testing machines

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Servo-hydraulic testing machines

HC-T / HB-T testing machines – For combined tensile/compression/torsion loading.

**HC-T table-top testing machine**
- size 10 kN / 100 Nm
- size 25 kN / 250 N
- stroke 100 mm
- angle 100° or 270°C

**HB-T floor-standing testing machine**
- axial forces 100 - 500 kN
- torque 1000 – 4000 Nm
- stroke 100 mm
- angle 100°
Servo-hydraulic testing machines

Anything but standard—Zwick develops testing machines and test methods for specific customer requirements.
Zwick offers all components which are needed for a servo-hydraulic testing machine or testing rig.

Controller and software for uni- and multi axial tests

Servo valves

Connector units

Actuators

Hydraulic grips

Hydraulic pumps

Cooling / Chiller
Servo-hydraulic testing machines

Zwick offers a comprehensive standard product range for high-speed testing.

HTM 2512  25kN 12m/s

HTM 5020/8020  50 / 80kN  20m/s

HTM 16020  160kN 20m/s
Vibrophores

Zwick's Vibrophores are an economic solution for performing fatigue tests on metal specimens and components.

[Images of various testing configurations, including standard specimens, screw testing, chain testing, threaded head specimens, conrod tests, gear wheel testing, fracture mechanics, specimen overview, high temperature testing, and 3-point flexure test.]
Vibrophores

The wide application range includes fatigue tests and fracture mechanics investigations, as well as static tests.

- Fatigue and durability tests on specimens and components with testXpert Research software
  - determine fatigue properties shown by the Wöhler curve (S/N curve)

- Static test with testXpert software
  - With the two in one function and testXpert II the Vibrophore is a static testing machine

- Fracture mechanics investigations
  - pre-cracking of CT and SEB specimens (ASTM E 399)

- Tests under various environmental conditions
  - high / low temperatures, aggressive fluids
Vibrophores

Zwick's Vibrophore produces fast test results for dynamic tests while keeping operating costs to a minimum, saving time and money in everyday testing.

- **Short test times** and a high specimen throughput level for dynamic tests due to high frequencies
- **Low energy consumption** thanks to resonance principle (approx. 2% of the energy consumption of a servo-hydraulic test system)
- **Minimal maintenance** costs because there are no wear parts
- **Easy installation** without additional infrastructure, such as a hydraulic system, coolant, or compressed air
- Yet the Vibrophore is a full-fledged **static testing machine**
Vibrophores

The Vibrophore is available from 50 to 1,000 kN

Vibrophore 1000

Vibrophore 500

Vibrophore 250

Vibrophore 50 / 100
Linear Motor Testing Systems

An LTM testing system can be used in all areas of materials testing quality control and component testing.

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<td>Fatigue test on athletic shoes</td>
<td>Fatigue test on prosthetics</td>
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Linear Motor Testing Systems

The new linear motor testing system LTM is based on an internally developed and patented electro-dynamic drive system, which optimally fulfills the requirements of materials testing.

- Flexible use for static and dynamic tests
  - Optimal drive characteristics thanks to a wide speed range of 0.016 mm/s to 1.5 m/s
- Accurate test results thanks to optimal positioning of the travel measuring system
  - Force application and travel measuring system align with the test axis, preventing tilting and bending moments, and thus travel measurement errors
  - Minimization of heat drifts produces more accurate test results
- Minimization of stick/slip effects resulting in more accurate test results even with lower amplitudes
  - Lower friction thanks to piston rod with hydrostatic bearing
- No additional costs or downtime for maintenance and adjustments
  - Maintenance-free piston break system
  - Oil-free testing system
Electro-Mechanical Testing Actuators

High test speed, precise control, simple handling — the single testing actuator is ideal for flexible use in the lab and in production.

- Flexible mounting
- Compact size even at high forces
- Can be used in customized test arrangements
- testXpert® II and testControl II
- No hydraulic power pack
- Test loads from 1 to 100 kN
Modernization technology for dynamic testing systems. Reliable service and future upgradeability with this new technology.

- State-of-the-art technology for uni-axial testing systems
- Highest degree of safety for the operator thanks to 2-channel safety circuits and operation mode switch for SETUP and TEST modes
- Simple handling of complex testing system
- Modular software structure for optimum customization to the test requirements
- Highly suitable for multi-axial test benches
- Cascadable servo controller
Services for Materials and Component Testing

We perform all types of testing services on all static and dynamic materials testing machines.

Do you have a test to perform but no way of testing it?

We offer

- State-of-the-art technology and modern testing machines
- Fast and standard-compliant testing
- Tests to factory standards
- Comparison testing
- Assistance in bridging your capacity bottlenecks
- Cost flexibility

Our trained engineers have many years of experience and sound expertise. Contact us.
You can rely on comprehensive consultation and support from Zwick experts in our dynamic application test lab.

- Let us demo our various dynamic testing machines for you, free of charge.
- We will pretest your materials to find the right machine and accessories.
- We offer customized training courses in our lab or at your location.
- We facilitate joint preacceptance of your solution at our headquarters in Ulm.
Zwick offers customized consultation and services. We support you throughout the entire lifecycle of your dynamic materials testing machine.

**Dynamic Testing Service Portfolio**

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<td>Machine relocation</td>
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**Procurement**
- LTM
- Vibrophone

**Commissioning**
- Inspection
- Hydraulic maintenance
  - Replacing the filter
  - Oil change
  - Hose change
- Calibration
- Retrofit
- Machine relocation

**Operation of the machine**
- Hotline support
- Repair work
- Spare parts
- Software services
- ZwickAcademy customer training courses
- Contract testing

**ZwickService - expertise and reliability**