Product Information
zwickiLine Materials Testing Machines Z5.0

Range of application
zwickiLine is a powerful, flexible and cost-effective testing solution for many different materials and components and is ideal for both research and development and routine quality assurance. A wide range of equipment options allows zwickiLine to be used for tests on plastics, elastomers, metals, composites, paper, board, textiles, foams, foodstuffs and components.

Made in Germany
zwickiLine, including all mechanical, electronic and software components, together with the extensive range of accessories are developed and produced at Zwick Roell’s production facility in Germany and are therefore ideally matched to each other. This means that zwickiLine is an extremely high-quality product and also allows Zwick to offer the best possible support.

Powerful drives
Extremely low minimum speeds can be set, combined with excellent speed-accuracy. The drive also delivers high crosshead travel resolution; this is important in tests on components requiring a high degree of travel-precision and in tests on specimens with high levels of stiffness and low travel, for example.

The high test speed range can be used without restriction. In addition, test loads up to 110% of the machine nominal load are permissible to compensate for heavy combinations of test fixtures, accessories etc.

Innovative high-quality load-frame design
- The new zwickiLine extruded profile possesses 6 continuous, freely accessible standard-profile slots for individual mounting of specimen materials, fixtures, safety devices, accessories etc.
- The generous test-area depth enables larger fixtures to be used and larger components tested, the wide base crosshead enabling optimum securing and retaining.
- High-quality machine design, including for example hard-wearing ceramic control buttons for the electronics, ensures a long service life.

High stiffness and precision crosshead guide
The stiff load-frame profile and large connecting surfaces reduce the inclination angle of the crosshead under load, enabling very precise alignment and application of force to the specimen. This is advantageous for flexure tests, compression tests, precision tests on components etc.

Safety for you and the entire testing system, and the modern safety device
Features ensuring safety include the 2-channel (= double safeguard) safety circuit, operating-mode selector switch and Drive Off switch. The operator is shielded from flying specimen fragments or other hazards by the CE-compliant safety device featuring a large test area, transparent design and excellent accessibility.
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**Powerful, innovative testControl II electronics**

zwickiLine is equipped with testControl II digital measurement and control electronics, mounted vertically on the load frame for better protection against ingress of liquids or conductive particles.

**testXpert II – intelligent and reliable**

testXpert II testing software and testControl II electronics are perfectly matched, ensuring safe, efficient, reliable operation of the materials testing machine. testXpert II offers the optimum solution for any testing requirement.

**Eco mode**

testControl II automatically switches to eco mode when not in use, saving energy.

**Built-in safety in accordance with EC Machinery Directive**

The statutory safety requirements of the EC Machinery Directive are implemented in all Zwick machines, which are accompanied by an EC Declaration of Conformity on delivery. Only the latest safety technologies and proven industrial components are used. A very high level of safety is guaranteed for user, test results, specimen material and testing system.

**Ergonomic remote control with display**

The entire test can be performed via the display-equipped remote control unit, independently of the PC. In addition, rapid, high-precision positioning is possible via the rocker switch with integrated thumbwheel.

**Overview of key advantages of testControl II electronics**

- **Flexibility through modularity**
  testControl II provides 6 flexible, time-synchronized slots, enabling several sensors to be in use at the same time, with monitoring and protection, regardless of use.

- **Machine compliance correction**
  The high-quality drive technology and online machine compliance correction enable extremely accurate travel measurement and positioning.

- **High data transmission rate**
  High data transmission rate (2000 Hz) allows fast measurement combined with maximum reproducibility. This is highly advantageous for rapid tests, short brittle fracture events and for tear growth, adhesion and peel tests, for example.

- **System monitoring**
  Detailed information regarding current status and usage level of testing equipment greatly simplifies processes such as planning maintenance and spares/replacement procurement.

- **Fast, adaptive drive-controller**
  The high drive control frequency of 1000 Hz enables fast, precise force and strain control. Benefits include enabling components to be loaded very quickly and accurately with the specified force. In addition, all control parameters required for fast, accurate approach to target positions are automatically set, enabling time and cost savings by eliminating the need for time-consuming pre-tests.

- **Maximum accuracy**
  High (24-bit) measured-value resolution for maximum test-result accuracy and reproducibility. This means for example that even minimal force changes on the specimen can be recorded and displayed accurately.

- **Innovative interfaces**
  E.g. time-synchronized EtherCat® bus system allows future-proof sensor integration to be taken for granted.
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Materials Testing

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<tr>
<th>Type</th>
<th>Z5.0 TS</th>
<th>Z5.0 TN</th>
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<td>Item number</td>
<td>059005</td>
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**Load frame**
- Test load \( F_{\text{in}} \) in tensile/compression direction: 5 kN, 5 kN, 5 kN
- Weight approx. (incl. electronics, without any accessories): 70 kg, 78 kg, 83 kg
- Height: 789 mm, 1289 mm, 1589 mm
- Height of the test area (without accessories): \( P_{\text{min}} \) ... \( P_{\text{max}} \)
- angled moving crosshead mounted upwards: 365 ... 540 mm, 365 ... 1040 mm, 365 ... 1340 mm
- angled moving crosshead rotated 180°: 125 ... 300 mm, 125 ... 800 mm, 125 ... 1100 mm
- Width (Width with electronic) \( \times \) Depth (Depth with electronic): 408 (411) \( \times \) 480 (622) mm
- Width of the test area \( \times \) throat depth (Test axis to profile): infinite \( \times \) 105 mm
- Maximum travel \( s \) of the mounting square: if \( E < P_{\text{min}} \): \( s = P_{\text{max}} - P_{\text{min}} \) if \( E > P_{\text{max}} \): \( s = P_{\text{max}} - E \)
  - \( E \) = sum of the mounting dimensions of the complete testing equipment (load cell, specimen grips/testing device, mounting stud)
- Noise level measured at maximum test speed: 55 dB(A)
- Finish: RAL 7021 black grey and RAL 7037 dusty grey
- Ambient temperature / Air humidity: +10 ... +35 °C / 20 ... 90 %
- Conformity: to ISO 9000 and CE

**Drive system**
- Motor: DC servo-motor
- Input signal, set-value preset: digital
- Controller / Cycle time: adaptive / 1000 Hz
- Crosshead speed \( v_{\text{min}} \) ... \( v_{\text{nom}} \): 0.0005 ... 600 mm/min
- Drive system’s travel resolution: 0.0168 µm
- Positioning, repetition accuracy: ± 2 µm

**Measurement and control electronics**
- Number of slots available for measurement and control modules: 2 synchronized module bus slots (expandable to 5)\(^4\)
- Force measurement: Grade 0.5 / 1 see load cell, according to DIN EN ISO 7500-1, ASTM E4
- Measurement range: up to 165 % of \( F_{\text{in}} \)
- Calculated resolution (e.g. in tensile / compression direction): 24 bit
- Data acquisition rate, internal: 400 kHz
- Test data transmission rate to the PC: 500 Hz (optional 2000 Hz)
- Zero-point correction: automatic at start of measurement
- Measurement signal runtime correction for all channels: yes
- Interface: Ethernet

**Power ratings**
- Electrical connections adjustable: 100 ... 240 V (Wide-range input)
- Range of tolerance: ± 10 %
- Power rating / Mains frequency: 0.5 kVA / 50/60 Hz

\(^{0}\) with option „Additional crosshead“ height is increased by 9 mm
\(^{0}\) Width option „Large base“: Width 583 mm, Width with electronic 585 mm, Depth 565 mm, Depth with electronic 707 mm
\(^{0}\) See drawing on front page
\(^{4}\) A DCSC module is included in delivery (occupies one module bus slot). The drive occupies an optional module bus slot.

**Options e.g.:**
- 2000 Hz online test data transmission, extension of the throat depth to 205 mm (up to \( F_{\text{max}} \) 2.5 kN), additional crosshead (up to \( F_{\text{max}} \) 2.5 kN), extension of the electronics to six slots (measuring channels)

**Accessories e.g.:**
- Specimen grips, test tools, load cell, extensometer, safety device

We would be glad to give you information to further options and accessories on request.

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