Product Information

cLine materials testing machine Z005 and Z010

Range of application
The cLine materials testing machine product group features a test area which is open to three sides. These testing machines are especially suitable for component testing and for materials-testing flexible foams. Component testing is primarily performed on flexible foam products such as vehicle seats and cushions and also mattresses. For materials testing, cubes or slabs of flexible foams are used. Compression tests, cyclic indentation tests and pulsating compressive strength tests (alternating load tests) are applied. Used in conjunction with our intuitive testXpert II testing software, cLine materials testing machines are very easy to operate.

Ergonomic operation
Improved ergonomics thanks to operation from the side, swiveling table extensions incorporated on both sides, an additional single-sided table extension and an optional display-equipped remote control for set-up and operating modes.

Standard-compliant positioning accuracy
Standard-compliant positioning accuracy is reliably achieved. The corrected targets are approached via online correction performed automatically in the testing software and the testControl II electronics. For the user this means greater accuracy in displacement measurement at specified loads.

Powerful drives
Extremely low minimum speeds can be set, combined with greater speed-accuracy, while the drive with zero-backlash ball-screw delivers high crosshead travel resolution. The motor employs zero-maintenance AC technology. The high test-speed range can be used without restriction, while faster return speeds mean reduced cycle times and increased test throughput.

Safety for you and the entire testing system
Features ensuring safety include the 2-channel (= double safeguard) safety circuit, operating-mode selector switch, Drive Off switch and motor holding brake.

Stiff, robust machine frame
The machine frame features rigid welded steel sheet construction.

Indenter tools
Indenters are available in different diameters according to the requirements of standards of company specifications and are circular flat, hemispherical or spherical. They are easy to install and change.
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**Integration into production process**
cLine materials testing machines can optionally be integrated into the production process, for example by means of roller conveyors before and after the support table.

**Made in Germany**
cLine, 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 cLine is an extremely high-quality product and also allows Zwick to offer the best possible support.

**Powerful, innovative testControl II electronics**
cLine 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.

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

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

**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 optional available display-equipped remote control unit, independently of the PC. In addition, rapid, high-precision positioning is possible via the rocker switch with integrated thumb-wheel.

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

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

- **System monitoring**
Detailed information regarding current status and usage level of testing equipment greatly simplifies processes such as planning maintenance and spares/replace ment 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.
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<table>
<thead>
<tr>
<th>Type</th>
<th>Z005</th>
<th>Z010</th>
</tr>
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<tbody>
<tr>
<td><strong>Item number</strong></td>
<td>1006325</td>
<td>1006326</td>
</tr>
<tr>
<td><strong>Fmax</strong></td>
<td>5 kN</td>
<td>10 kN</td>
</tr>
</tbody>
</table>

#### Test area
- Height: 819 mm
- Width: 1000 mm
- Depth (table-leaves retracted): 450 mm
- Depth (table-leaves expanded): 1450 mm

#### Load frame
- Height: 2630 mm
- Width (with electronic): 1495 mm
- Depth (table-leaves retracted): 800 mm
- Depth (table-leaves expanded): 1450 mm
- Maximum travel of the moving crosshead (without accessories): 600 mm
- Weight with electronic: ca. 580 kg
- Noise level at maximum test speed: 55 dB(A)
- Finish: RAL 7021 black grey, RAL 7038 agate grey, RAL 3031 orientred
- Ambient temperature: +10 ... +35 °C
- Air humidity: 20 ... 90 %

#### Drive system
- Motor: AC servo-motor
- Motor holding brake: yes
- Input signal, set-value preset: digital (real-time Ethernet, EtherCAT®)
- Controller / Cycle time: adaptive / 1000 Hz
- Crosshead speed $V_{Min} ... V_{Nenn}$: 0.0005 ... 1000 mm/min
- Increased crosshead return speed (at reduced force): 1500 mm/min
- Drive system’s travel resolution: 0.0232 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)
- Force measurement: grade 0.5 / 1 see load cell, to DIN EN ISO 7500-1, ASTM E4
- Measurement range: up to 165 % of $F_N$
- 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: automatically at measurement begin
- Measurement signal runtime correction for all channels: yes
- Interface for PC: Ethernet
- Eco Mode: yes, power section automatically switched off (time adjustable)
- CE conformity: yes, according to machine guidelines 2006/42/EG

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1. A high-quality DCSC measurement modul is included in delivery (occupies one module bus slot).
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**Power ratings**

- **Electrical connections**: 230 VAC (1 PH, N, PE)
- **Range of tolerance**: ± 10 %
- **Mains frequency**: 50/60 Hz
- **Power rating**: 0.7 kVA
- **EMC characteristics**: Conforms to the relevant highest requirements of EN 63126-1 (Class B immunity, Class A emitted interference)

Further cLine materials testing machines (30/50 kN) are available on request.

**Optional accessories**

<table>
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<th>Description</th>
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<tr>
<td>Extension of the testing table for the cLine materials testing machine</td>
<td></td>
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<tr>
<td>- One-sided bench table extension by 250 mm</td>
<td>1011378</td>
</tr>
<tr>
<td>- For testing of molded foam samples</td>
<td></td>
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<tr>
<td>- Suitable for use with 5 kN and 10 kN cLine</td>
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