Zwick / Roell

Zwick
Materials Testing

Product Information

zwickiLine materials testing machines Z0.5 up to Z2.5

zwickiLine range with testControl II electronics

zwickiLine with CE-compliant safety device

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-constancy. 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

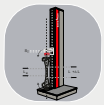
The statutory safety requirements of the EC Machinery Directive are implemented in all Zwick machines, which are accompanied by an EC Declaration of Conformity on delivery. Only the latest safety technologies and proven industrial components are used. A very high level of safety is guaranteed for user,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

Ergonomic remote control with display

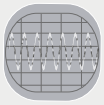
The entire test can be performed via the display-equipped remote control unit, independently of the PC. In addition, rapid, high-precision positioning is possible via the rocker switch with integrated thumbwheel.

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-synchronised EtherCat® bus system allows future-proof sensor integration to be taken for granted.

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Data	Value
Load frame	
Finish	RAL 7021 black grey and RAL 7037 dusty grey
Ambient temperature	+10 ... +35 °C
Air humidity	20 ... 90 %
Conformity	to ISO 9000 and CE
Antrieb	
Motor	DC servo-motor
Input signal, set-value preset	digital
Controller / Cycle time	adaptive / 1000 Hz
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)[1] 1 synchronised PCIe slot
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 acquisation 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	100 ... 240 V (Wide-range input)
Range of tolerance	± 10 %
Power rating	0.44 kVA
Mains frequency	50/60 Hz

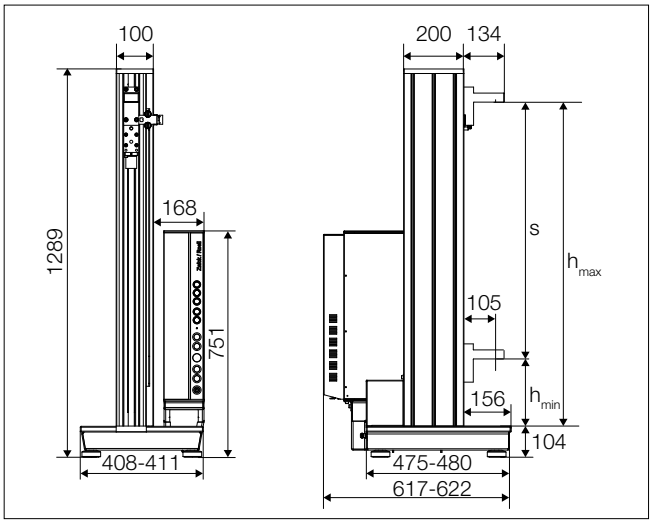
[1] A DCSC module is included in delivery (occupies one module bus slot). The drive occupies an optional module bus slot.

Options e.g.:

- Large base
- 2000 Hz online test data transmission
- Extension of the throat depth to 205 mm
- Increase of the speed to 3000 mm/min (only for type Z0.5)
- Extension of the Electronics to six slots (measuring channels)

Accessories e.g.:

- Additional upper crosshead
- Extensometer
- Specimen grips
- Test tools



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

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Type Item number	Z0.5 TS 058992	Z0.5 TN 058993	Z0.5 TH 058996	Z1.0 TS 058997	Z1.0 TN 058998	Z1.0 TH 058999	Z2.5 TS 059001	Z2.5 TN 059003	Z2.5 TH 059004		
Load frame											
Test load F_N in tensile/compression direction	0.5	0.5	0.5	1	1	1	2.5	2.5	2.5	kN	
Height ca.[1]	789	1289	1589	789	1289	1589	789	1289	1589	mm	
Width[2]	411	411	411	411	411	411	411	411	411	mm	
Depth (with electronics console)[2]	480 (622)									mm	
Weight approx. (incl. electronics, without any accessories)	68	76	81	68	76	81	68	76	81	kg	
Height of the test area h_{min} ... h_{max}:[3]											
angled moving crosshead mounted upwards	235 ...565	235 ...1065	235 ...1365	235 ...565	235 ...1065	235 ...1365	235 ...565	235 ...1065	235 ...1365	mm	
angled moving crosshead rotated 180° (without accessories)	90 ...420	90 ...920	90 ...1220	90 ...420	90 ...920	90 ...1220	90 ...420	90 ...920	90 ...1220	mm	
Maximum travel (s) of the mounting square:	if $E < h_{min}$: $s = h_{max} - h_{min}$ if $E > h_{min}$: $s = h_{max} - E$										
E = sum of the mounting dimensions of the complete testing equipment (load cell, specimen grips/testing device, mounting stud)											
Width of the test area	infinite										
Throat depth (Test axis to profile)	105	105	105	105	105	105	105	105	105	mm	
Noise level measured at maximum test speed	61	61	61	55	55	55	55	55	55	dB(A)	
Drive system											
Crosshead speed v_{min} ... v_{nom}	0.0005 ...2000[4]	0.0005 ...2000[4]	0.0005 ...2000[4]	0.0005 ...2000	0.0005 ...2000	0.0005 ...2000	0.0005 ...1000	0.0005 ...1000	0.0005 ...1000	mm/min	
Drive system's travel resolution	0.0830	0.0830	0.0830	0.0554	0.0554	0.0554	0.0277	0.0277	0.0277	µm	
Positioning, repetition accuracy	± 2	± 2	± 2	± 2	± 2	± 2	± 2	± 2	± 2	µm	

[1] With option „Additional crosshead" height is increased by 9 mm
[2] Width option „Large base": Width 586 mm, Depth 565 mm, Depth with electonics console 707 mm
[3] See drawing on page 2
[4] With option the speed can be increased up to 3000 mm/min