

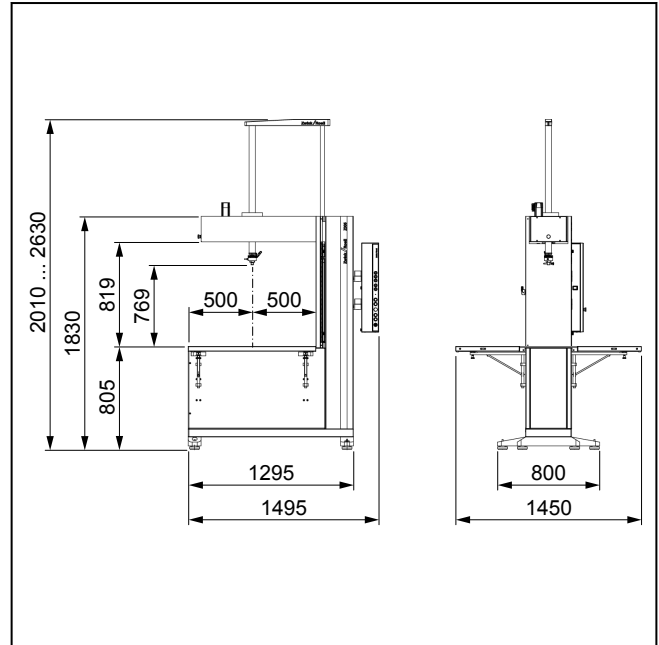
Product Information

Materials Testing Machines cLine Z005 and Z010

CTA: 98096 64022



cLine testing system



cLine, scale diagrams

Applications

The cLine product group features a test area which is open on three sides.

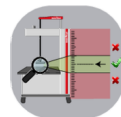
cLine materials testing machines are ideal for component testing and for testing flexible foam materials. Component testing mainly involves flexible foam products such as mattresses and vehicle seats and upholstery. For materials testing, cubes or slabs of flexible foam are used. Compression tests, cyclic indentation tests and pulsating compressive strength tests (alternating load tests) are employed.

Advantages and features



Ergonomic operation

Improved ergonomics due to side operation, swiveling table extensions 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 using online correction performed automatically in the testXpert III testing software and the testControl II machine electronics. For the user this means greater accuracy in displacement measurement at specified loads.



Powerful drives

Extremely low minimum speeds can be set with simultaneous high speed-stability, while the zero-backlash ball-screw shaft delivers high crosshead travel resolution. The motor employs zero-maintenance AC technology. The high test-speed range can be used without restriction. Faster return speeds mean reduced cycle times and increased test throughput.



Stiff, robust machine frame

The robust and stiff design of the C-shaped load frame enables high accuracy when measuring the deformation of flexible specimens. This allows the use of additional sensors to be avoided for many applications with the cLine.

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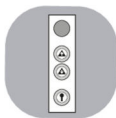
Compression die tools

Compression dies are available in different diameters according to the requirements of standards of company specifications. Compression dies are circular flat, hemispherical or spherical. They are easy to install and change.



Integration into production process

cLine materials testing machines can optionally be integrated into the production process, for example by means of roller conveyors in front of and behind the support table.



Safety for the entire testing system

The highest level of safety is achieved with the two-channel safety circuit. It includes the crosshead limit switch, the drive-Off switch, motor break function and the operation mode switch. Relevant accessories are also integrated into the safety circuit. The CE-compliant safety device with electrical interlocking and mechanical guard locking prevents interference with the machine during the test.



ZwickRoell Engineering – Made in Germany

The development and manufacture of materials testing machines, including all mechanical, electronic and software components, together with our comprehensive range of accessories, takes place at ZwickRoell's production facility in Germany, enabling us to create a product that is perfectly harmonized. Each materials testing machine is made of the highest quality standard enabling ZwickRoell to offer the best possible support.

Overview of the key advantages of testControl II machine electronics



Innovative testControl II machine electronics

All ZwickRoell materials testing machines are equipped with the powerful testControl II measurement and control electronics, offering the ideal basis for precise, reproducible test results.

The electronics are mounted vertically on the side of the load frame. This position protects the electronics from penetration of liquids and conductive particles.

The high-quality surfaces protect testControl II from external influences. In addition, the components used are highly durable.



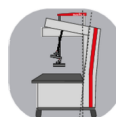
testControl II machine electronics and testXpert III testing software – a powerful combination

testXpert III testing software and testControl II machine electronics are perfectly matched, ensuring safe and efficient operation of the testing system. testXpert III provides the optimal solution for any testing requirement.



Integrated safety in accordance with the EC Machinery Directive

Maximum level of safety for user and testing system is guaranteed. All EC Machinery Directive safety requirements are guaranteed. Compliance is documented with an EC Declaration of Conformity. State-of-the-art safety technology and proven industrial components that comply with the highest level of safety and industrial standards (IEC 60947) are used.



Machine compliance correction

Due to the high-quality drive technology and real-time correction of the machine compliance during the test, target positions are approached with accuracy and travel is precisely determined with the crosshead travel monitor. The testXpert III testing software automatically sets the optimal correction curve, guaranteeing the highest possible level of precision.

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System monitoring

testControl II system monitoring provides the user/laboratory manager with detailed information on the current status and level of utilization of the testing equipment. This enables further increases in testing equipment availability and greatly simplifies maintenance planning and spares/replacement procurement.



Fast, adaptive drive controller

The high drive control frequency of 1,000 Hz delivers fast, precise force and strain control. Benefits include enabling components to be loaded very quickly and accurately with a predetermined force.



Maximum accuracy

The smallest force changes on the specimen are quickly and accurately recorded and displayed. The A/D converter guarantees high measured-value accuracy over a wide measurement range with sampling rates of 400 kHz and 24 bit resolution.



Eco mode

The testControl II machine electronics automatically switch to eco mode when not in use, saving energy.



Ergonomic remote control with color display

Tests can be performed entirely via the display-equipped remote control, independent of the PC. All important information is shown on the color display. Machine operation is therefore more ergonomic and effective. Maximum operator safety is guaranteed with the integrated Emergency stop. The rocker-switch with integrated dial makes positioning fast yet highly accurate.

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Technical data

Type Item No.	Z005 C 1006325	Z010 C 1006326	
Test load F_{max}	5	10	kN
Test area			
Height	819	819	mm
Width	1000	1000	mm
Depth with folded table extensions	450	450	mm
Depth with raised table extensions	1450	1450	mm
Travel s of the moving crosshead, max.	600	600	mm
Load frame			
Dimensions			
Height	2630	2630	mm
Width with machine electronics	1495	1495	mm
Depth with support legs and folded table extensions	800	800	mm
Depth with support legs and raised table extensions	1450	1450	mm
Weight			
With machine electronics, approx.	580	580	kg
Finish	RAL 7021, RAL 7038 , RAL 3031	RAL 7021, RAL 7038 , RAL 3031	
Ambient temperature	+10 ... +35	+10 ... +35	°C
Relative humidity (non-condensing)	20 ... 90	20 ... 90	%
Average noise level at v_{max} measured at 1 m distance from the front of the machine	55	55	dB(A)
Drive system			
Motor	AC servo motor	AC servo motor	
Motor holding brake	Yes	Yes	
Control, set value preselection	Digital (real-time Ethernet, EtherCAT®)	Digital (real-time Ethernet, EtherCAT®)	
Crosshead speed $v_{min} \dots v_{max}$	0.0005 ... 1000	0.0005 ... 1000	mm/min
Crosshead return speed, max.	1500	1500	mm/min
Drive travel resolution	0.0232	0.0232	µm
Positioning repeatability (without reversal of direction)	±2.0	±2.0	µm
Controller	Adaptive	Adaptive	
Cycle time	1000	1000	Hz
Power input specifications			
Power supply	230	230	V, 1Ph/N/PE
Permissible voltage fluctuation	±10	±10	%
Power consumption (full load), approx.	700	800	VA

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Type	Z005 C	Z010 C	
Item No.	1006325	1006326	
Power frequency	50/60	50/60	Hz
EMC properties	Complies with the maximum requirements of EN 61326-1 (Class B immunity, Class A emissions)		

Description	Value
Machine electronics	
Number of available slots for measurement and control modules:	
Synchronized module slots	2 (expandable to 5) ¹⁾
Synchronized PCIe slots	1
Force measurement	Class 0.5/1, depending on load cell, compliant to DIN EN ISO 7500-1, ASTM E4
Measurement range	Up to 165% of Fmax
Calculated resolution (e.g., load cell in tensile/compression direction)	24 bits
Effective resolution in tensile/compression direction:	
DCSC module	19 bits (corresponds to ±524,000 points)
USC module	20 bits (corresponds to ±1,000,000 points)
Measured value recording rate	400 kHz
Measured-value transmission rate to PC	500 (optional 2000) Hz
Zero-point correction	Automatic, at start of measurement
Measurement signal run-time correction	Yes
Interface to PC	Ethernet
Eco mode	Yes (time adjustable)
CE conformity	Yes, according to Machinery Directive 2006/42/EC

1) A DCSC module is included in the scope of delivery (occupies one module slot).

Optional accessories

Test table extension

Single-sided test table extension of 250 mm for mounting large molded foam specimens.

Type	Dimensions			Weight, approx. [kg]	Item No.
	Length [mm]	Width [mm]	Height [mm]		
Test table extension	1001	500	40	9.3	1011378

Mounting stud

For connecting specimen grips for simple tensile tests.

Connection, stud [mm]	Test load F _{max} [kN]	Item No.
Ø 8	1	1016244
Ø 20	10	1016245