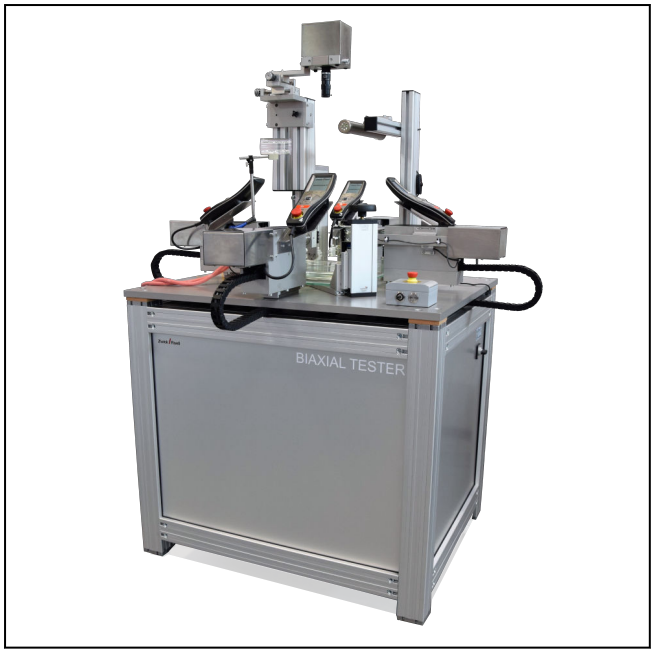
Zwick / Roell

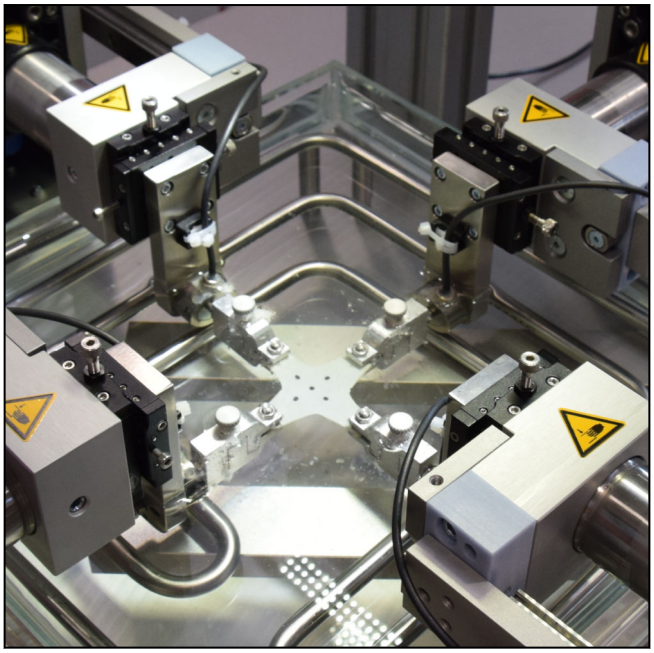
Product Information

Biaxial Testing Machine for Biomaterials

CTA: 179418 179420



Biaxial testing machine



Load application via parallel-closing clamps with pyramid jaws, specimen marking for videoXtens AddOn

Applications

This biaxial testing machine was developed for mechanical testing of natural and artificial elastic tissues. Biaxial testing is often necessary to characterize the anisotropic properties of these tissues.

In uniaxial tests, mechanical properties may change during the test due to the possible alignment of fibers along the test axis. The clamping arrangement must be designed in such a way that the tissue is held securely during the test without being damaged.

For biaxial loading, lateral movement must be unrestricted to ensure uniform specimen deformation. The strain measurement system must not have any effect on the specimen and must record strain in all loading directions.

The testing machine features four high-resolution linear drives (travel distance: 50 mm) that can be position-, force- or strain-controlled completely independent of each other. The force is measured via four load cells (two load cells each in the X and Y direction) with a maximum test load of 100 N.

The system consists of

- Vibration-damped mobile table
- Four testControl II measurement and control electronics units
- Four high-resolution linear drives
- Four load cells
- laserXtens with videoXtens AddOn
- Height-adjustable liquid basin (e.g. NaCl solution) with temperature regulation option

Advantages and features

- Use of the non-contact laserXtens with videoXtens add-on allows for biaxial strain measurement with just one extensometer
- The laserXtens does not require specimen marking
- Specimen marking is required with the videoXtens add-on, if the specimen does have a naturally occurring pattern with sufficient contrast
- Optional strain control including mid-point control via four independent linear drives (dependent on the material), only in combination with 2D dot matrix of the videoXtens add-on

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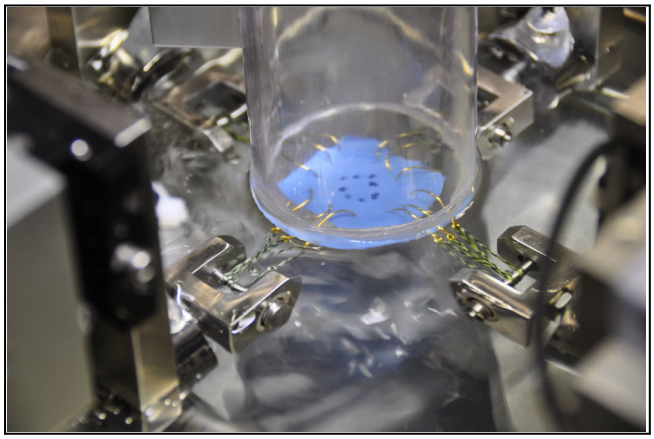
Liquid basin

- The liquid basin can be lowered for easy specimen gripping
- The liquid basin can be easily raised for testing
- Use of transparent plastic breakwater for improved signal quality in air, thereby ensuring that the transition from gaseous to liquid medium is free from optical interference



Breakwater made of transparent plastic | Load application via flexible hooks

Specimen grips

The following load application options are available:

- Free-moving hooks attached to thin yarn and linked for flexibility
- Parallel-closing clamps with pin-plates
- Parallel-closing clamps with pyramid jaws

Optical strain measurement

laserXtens

- Digital camera system
- Consists of 4 red lasers

videoXtens AddOn

- Digital camera system
- LED incident light (white)
- Marking kit

Biaxial testing machine for biomaterials		
Item No.	MP00649	
Load cell	50, 100 or 200	N
Travel	50	mm
Speed, max.	6000	mm/min
Displacement measurement resolution	1	µm
Dimensions		
Width	1020	mm
Depth	820	mm
Height	1800	mm
Table height	Adjustable between 950 and 1050	mm
Specimen sizes, min.	Approx. 20 x 20	mm
Specimen sizes, max.	Approx. 150 x 150	mm
Power supply voltage	230	VAC
Connection	400 V, 3 Ph/N/PE, max. 4 kVA	

Load cell		
Accuracy	Class 1: 2 % ... 100 % of the nominal force	
Force signal resolution	< 0.7	mN
Version	INOX laser-welded	
Protection class	IP67 (dustproof and waterproof)	

All data at ambient temperature.

Subject to change in the course of further development.

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Liquid basin		
Dimensions		
Width	300	mm
Depth	300	mm
Height	80	mm
Holding capacity	Approx. 5	l
Safety glass	6	mm
Temperature conditioning	Up to 65 °C (heating optionally available)	