

Product Information

Kappa Multistation creep testing machine for plastics testing

CTA: 179407 216530



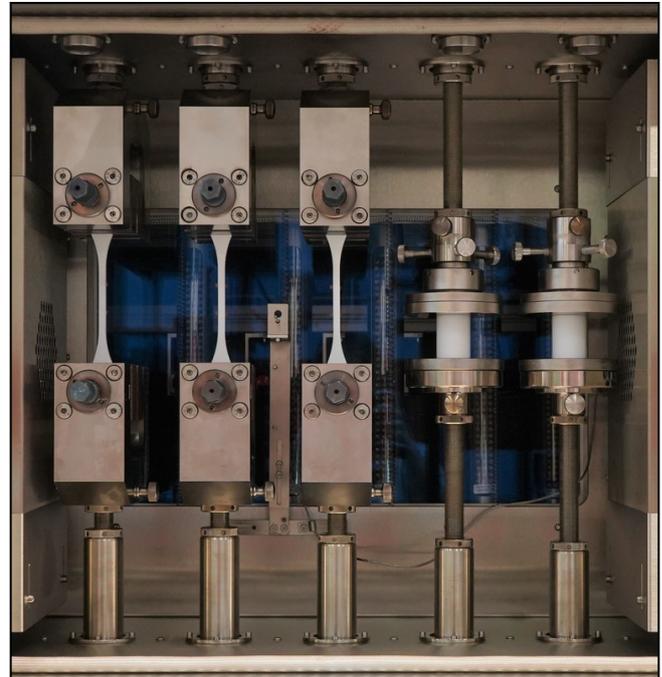
Kappa Multistation with five test axes

Applications

The Kappa Multistation is a compact and flexible electromechanical creep testing machine with up to six individually controlled load axes. This cost and space efficient testing system is ideal for a wide spectrum of specimen materials, and is considered the specialist for creep tests on plastics and composites. The flexible testing system is ideal for changing test tasks such as in modern development and testing laboratories.

The Kappa Multistation can be used for various applications at ambient temperature, under low and elevated temperatures as well as in humidity conditions:

- Creep tests with constant load to ASTM D2990 (creep-tensile, -flexure, and -compression tests) and to ISO 899-1 (tensile) and -2 (flexure)
- Stress relaxation tests with constant elongation
- Force and strain controlled tests (closed loop) with force, strain and temperature sequences (stepless/in blocks)
- Tests with flexible loads, e.g. constant force increase rates
- Time-lapse testing methods, e.g. SIM, TTS, SSM
- Quasi-static tests acc. to ISO 527 or ASTM D 638
- Long-term tests up to 10,000 h



Creep tensile and creep compression test

Advantages and features

Specific machine design

Cost and space saving design with a robust test frame:

- Five or six independently controlled load axes in one test frame
- Central lead screw drive and precision guidance via two steel columns for precise axial loading according to ASTM E292
- Load string with optimum alignment properties to ASTM E1012
- Long stroke of 200 mm per load string
- No mutual influence of the individual load strings at specimen break
- Precise loading rate with tolerance of ± 0.1 % of the set speed in the measurement range of 1 $\mu\text{m/h}$ to nominal speed, unloaded or under constant load
- Precision testing machine to DIN EN ISO 7500-1

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One non-contact video extensometer per test axis

Precise control

The individually and independently controlled load axes enable force and strain controlled tests in a closed loop.

- High-resolution force and travel measurement for optimum control properties, especially at very low test speeds
- Fast and precise force and strain control through high drive control frequency of 1000 Hz
- Precise loading rate of $\pm 0.1\%$ of the set speed in the measurement range of $1 \mu\text{m/h}$ to nominal speed, unloaded or under constant load
- Steplessly adjustable force range of 20 N to 10 kN in accuracy class 1 to ISO 7500-1

Non-contact extensometer

In accordance with recommendation by ISO 899-1, strain measurement is carried out with non-contact videoXtens, which has no influence on the specimen.

- Individual high-precision camera for each test axis
- Quick and precise measurements via fixed positioning of the cameras
- Strain measurement meets accuracy class 1 (class 0.5 on request)
- No mechanical influence on specimens, since sensor arms are not required
- No influence on the temperature, since strain measurement occurs through view window from behind
- Wide range of specimen marking options
- Flexible initial gauge lengths and measurement ranges



Temperature chamber

- Application within the entire temperature range of the temperature chamber
- Ideal for tensile, compression, and flexure tests

Consistent temperatures

A common temperature chamber for all load axes ensures precise temperatures:

- In a temperature range of $-40\text{ }^{\circ}\text{C}$ to $+250\text{ }^{\circ}\text{C}$
- Within a tolerance of $\pm 3\text{ K}$
- Cooling with liquid nitrogen (LN2)
- Self-supporting stainless steel housing with view windows on the front and rear sides
- Optimal heat distribution via two heating coils and two fans (air flow principle)
- Equipped with PT100 temperature sensor and Teflon bushings for upper and lower feedthrough of the load strings
- Interior illumination of temperature chamber for observing test progress

Flexible environmental conditions

Easy simulation of different environmental conditions with integrated temperature and humidity control:

- Heating: RT $+15\text{ }^{\circ}\text{C}$ to $+250\text{ }^{\circ}\text{C}$
- Heating and cooling with LN2: $-70\text{ }^{\circ}\text{C}$ / $-40\text{ }^{\circ}\text{C}$ to $+250\text{ }^{\circ}\text{C}$
- Heating and cooling with refrigeration unit: $-40\text{ }^{\circ}\text{C}$ to $+250\text{ }^{\circ}\text{C}$ ¹⁾
- Heating and cooling with controlled humidity environment:
 $+20\text{ }^{\circ}\text{C}$ to $+90\text{ }^{\circ}\text{C}$ and 20% to 90% relative humidity ¹⁾
- Standard-compliant tolerance: Temperature $\pm 2\text{ }^{\circ}\text{C}$ and relative humidity $\pm 5\%$

¹⁾ Combination of bullet point 3 and 4 possible

All data at ambient temperature.

Subject to change in the course of further development.

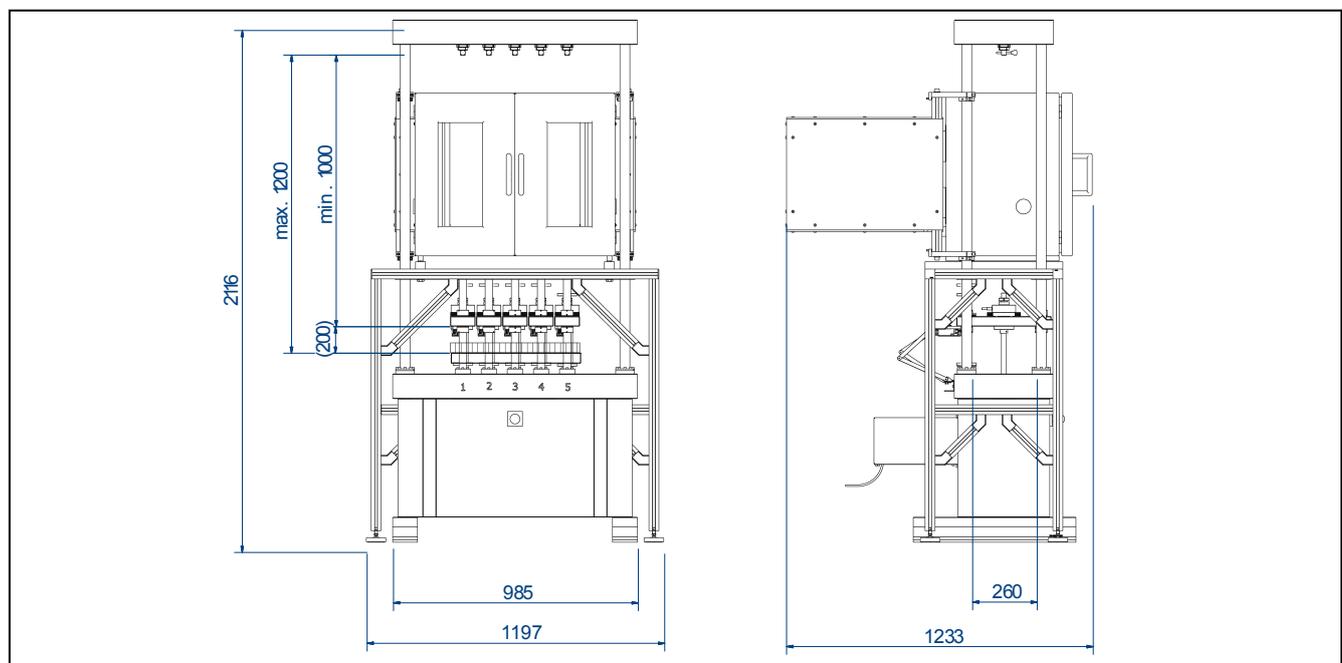
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Technical data

Type	Kappa Multistation	
Test load per test axis, Fmax	10	kN
Number of test axes	5 (if required by the customer, 6 test axes are also possible)	
Distance between the axes	105	mm
Crosshead travel, max.	200	mm
Lateral guidance of the crosshead	Precision friction bearings on two hard-chromed columns (30 mm diameter)	
Test speed range	0.001 mm/h to 100 mm/min	
Return speed	100	mm/min
Test speed accuracy	< ±0.1 % (measured over an interval of min. 5 s or 10 mm travel)	
Position transducer travel resolution	0.0025	µm
Test frame dimensions		
Width	985	mm
Depth	1470	mm
Height	2116	mm
Weight	1200	kg
Supply voltage	230	VAC
Installed power load per test axis	400	VA

CTA: 179376



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