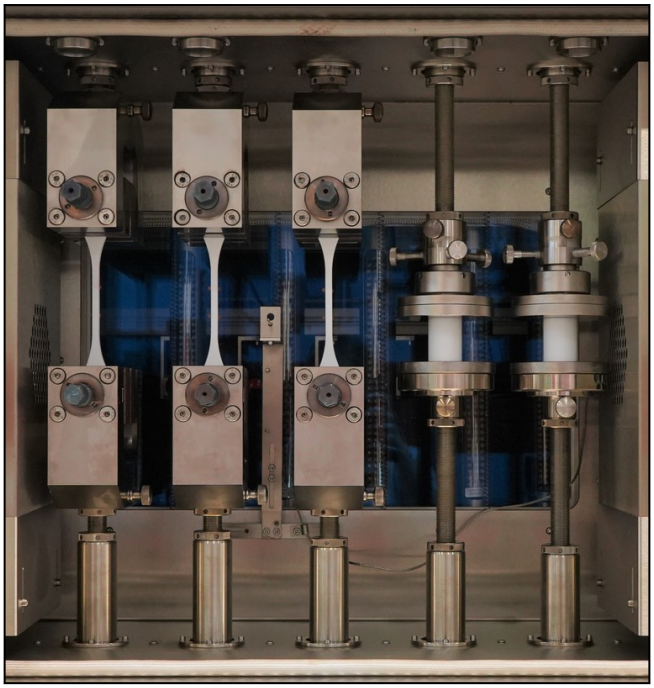
Product Information

Kappa Multistation creep testing machine for plastics testing

CTA: 179407 216530

Kappa Multistation with five test axes



Creep tensile and creep compression test

Applications

The Kappa Multistation electromechanical creep testing machine offers a wide range of applications for tensile, compression, and flexure testing of plastics:

- Creep tests to ASTM D2990 (creep-tensile, -flexure, and -compression tests) and to ISO 899-1 (tensile) and -2 (flexure)
- Quasi-static tests to ISO 527 or ASTM D638
- Strain-controlled relaxation tests
- Tests with different load and strain blocks
- Tests with flexible loads, e.g. with constant force increase rates
- Long-term tests up to 10,000 h
- Ambient temperature, depth or elevated temperatures

Advantages and features

- High stiffness, precision, and flexibility due to four-column design
- No special foundation required
- Vibration isolation through Sylomer damper
- Five to six individually controlled test axes
- No mutual influence of the individual load strings due to vibration at specimen break
- Two guide columns and one individual lead screw for each test axis
- Steplessly adjustable force measurement range 0.2% to 100% of F_{nenn} e.g. 20 N to 10 kN
- Stepless adjustment of force and temperature
- Temperature steps: Temperature can be increased in respectively defined time intervals (stepped-isothermal method - SIM)
- A single temperature chamber for all test axes (temperature tolerance of ±3 K between the test axes)
- Can be combined with videoXtens (creep standards recommend non-contact strain measurement)
- Monitoring and analysis of the tests with testXpert® III Multistation Software
- High resolution motor encoder and high resolution force channel provide excellent control behavior
- Precise speed of ±0.1% of the set speed in the measurement range of 0.001 mm/h to 100 mm/min unloaded or under constant load (average value above 5 s or 10 mm)
- Long service life due to use of brushless AC motors

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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

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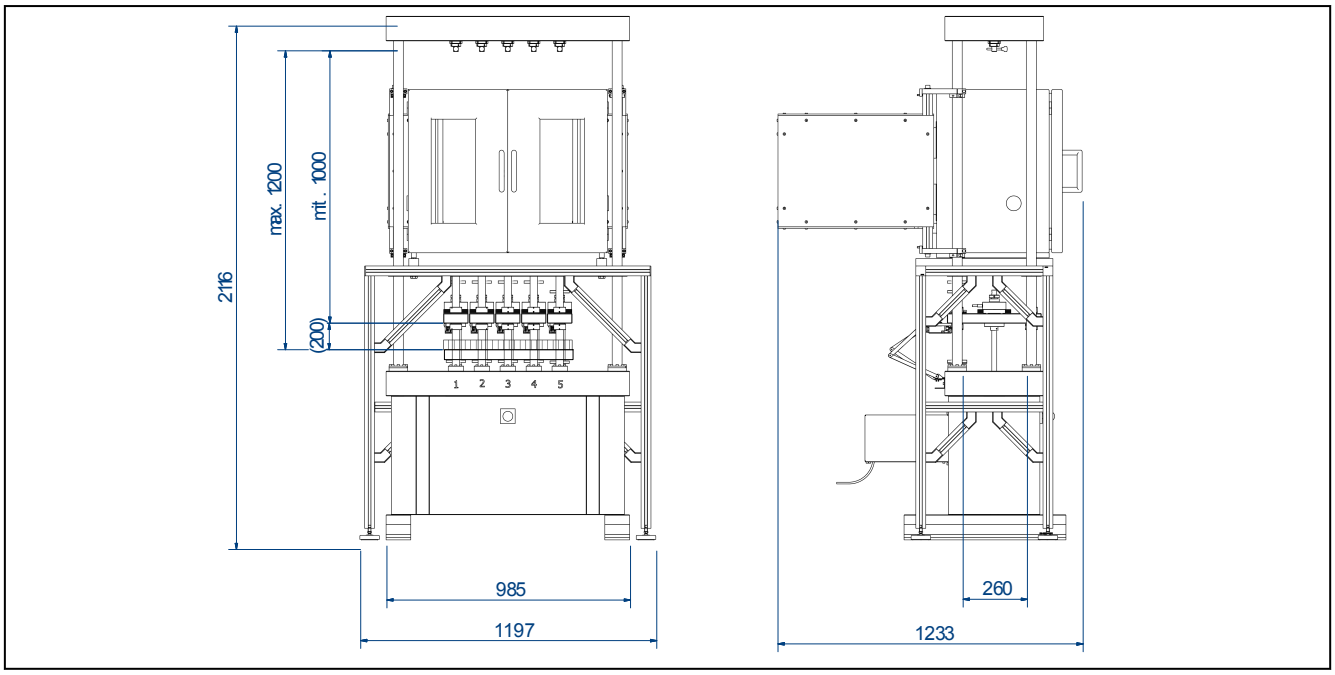

Kappa Multistation with five test axes

All data at ambient temperature.

We reserve the right to make technical changes in the course of ongoing development.

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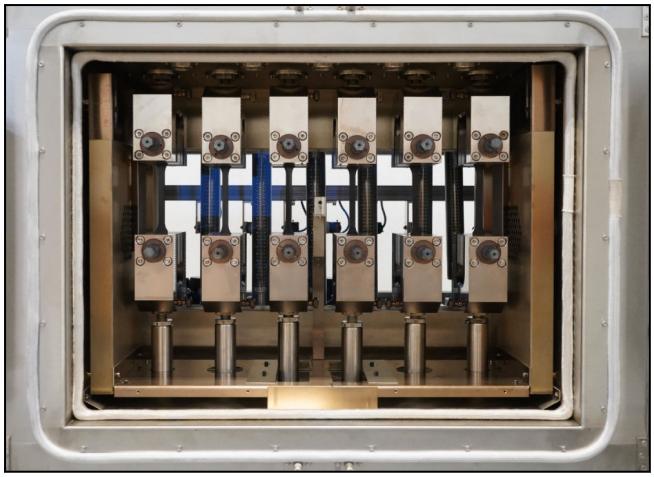
Accessories required



One non-contact video extensometer per test axis

Temperature chamber

Non-contact video extensometer

- One high-precision camera per test axis
- Quick and precise measurements via fixed position cameras
- Quick test setup with testXpert testing software
- No influence on the specimen (no indentations made due to knife edges making contact)
- No influence on the temperature (since view window is available)
- Mounting of sensor arms is not necessary
- Flexible measurement length and measurement range
- Easy accessibility due to mounting outside the chamber
- Application options span the entire temperature range of the temperature chamber
- Axial loading: Measurement of the axial strain of a loaded specimen
- Flexure testing: measurement of the deflection of a loaded specimen
- Compression testing: measurement of the axial strain of a loaded specimen

Equipment

- Specimen grips for tensile specimens
- 3-point flexure test kit
- 4-point flexure test kit
- Compression test kit

Possible environmental conditions

- Heating: 10°C above ambient temperature up to +250°C
- Heating and cooling with LN_2: -40°C to +250°C
- Heating and cooling with refrigeration unit: -30°C to +180°C (expandable to +250°C)
- Heating and controlled humidity environment: 10°C above ambient temperature to +90°C and 10% to 90% relative humidity
- Heating, controlled humidity environment and cooling:
  - without humidity control -30°C to +180°C (expandable to +250°C)
  - with humidity control +20°C to +90°C and 10% to 90% relative humidity

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Standard temperature chamber

- Temperature range of -40°C to +250°C
- Temperature tolerance from ±3 K to 250°C
- Cooling using LN_2
- Self-supporting, double-wall stainless steel housing
- Non-contact strain measurement with video extensometer via view window with four-pane glass on the rear side of the temperature chamber
- Optimal heat distribution via two heating coils and two fans (air flow principle)
- Teflon bushing for upper and lower feedthrough
- Equipped with PT100 temperature sensor
- Interior illumination of temperature chamber for observing test progress

Temperature controller

- External Eurotherm® temperature controller
- Digital display of temperature: 0.1°C
- Connection for window heating
- Connection for chamber light
- Controlled via testXpert testing software

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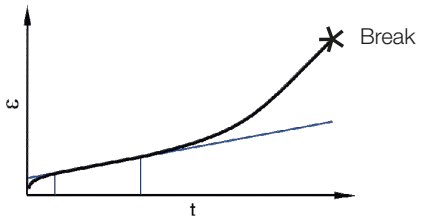
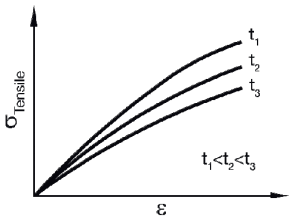
Test types

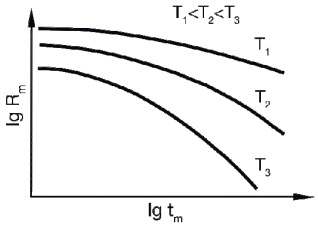


Creep diagram

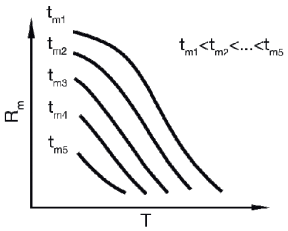


Isochronal stress-strain curve

from multiple creep tests up to break

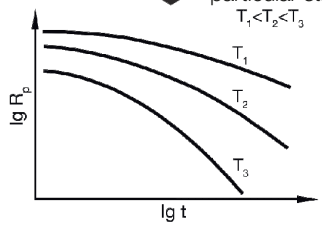


Creep diagram

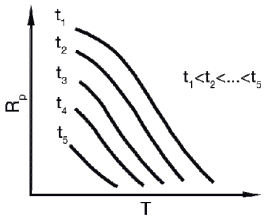


Isochronal creep curve

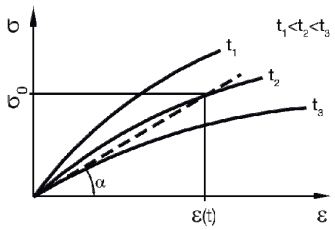
from multiple creep tests up to a particular strain



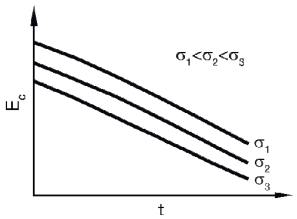
Creep strain diagram



Isochronal creep strain curves



Definition of the creep modulus in isochronal stress-strain curve



Creep modulus curves