Laboratory Capillary Rheometer LCR 7000

Series LCR 7000

Versatile

The new LCR 7000 Capillary Rheometer offers many new features and will meet the demands of a 24-hour a day shop floor operation while maintaining the highest possible level of accuracy, repeatability and sensitivity. The LCR series rheometers are versatile and easy to use yet they offer the most sophisticated materials characterization, data analysis, and reporting capabilities. The LCR 7000 can be used with a standard load cell and a barrel mounted pressure transducer.



Sophisticated Software

LAB KARS ("Kayeness Advanced Rheology Software") is the most powerful and easy to use rheological Windows™ based software package available. This software runs from within Microsoft® Excel 97. Any current Excel user will find the new LAB KARS simple to learn and easy to customize. Just a few of its easily useable features include: Bagley and Rabinowitsch Corrections plus power law, Carreau, Modified Cross and polynomial viscosity models. With this software users can merge multiple data files from shear stress, shear rate, or thermal stability tests. The resident KARS SQC module can be used to quickly identify viscosity variations in different lots of material. A program for the correlation of melt viscosity to intrinsic viscosity, for PET and Nylon, is also included.

Real-Time Display

In addition to all of its other powerful features LAB KARS for Windows™ pro-vides a real time display of force or pressure versus time as a test progresses. This feature allows the operator to identify the steady state flow condition for the material. In addition, the presence of contamination, unmelted resin, or bubbles in the material may be identified from spikes in the force versus time curve.

Features for Ease of Use and Precision

- All digital calibration
- Increased speed and force range
- Advanced electronics and software enable up to 45 shear stress or shear rate data points per test
- Unique algorithms for polymer melt stability
- Bi-directional communications enable test parameters to be downloaded from the PC
- Four barrel heating zones and adaptive PID temperature control algorithm provide precise and uniform heat up to 430°C (500°C optional)
- Precision servo-drive motor and transducers enable tight control of stress and rate mode tests
- Tungsten carbide dies and a hardened and honed tool steel barrel ensure long years of service
- LAB KARS, advanced rheology software, operates from within Microsoft® Excel 97

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Option for special requirements

A comprehensive list of optional features provides for the testing of a wide range of materials. These include:

A corrosion resistant alloy barrel for testing corrosive materials such as PVC.

Tungsten carbide dies with a broad range of diameters and L/D ratios provide a wide range of measurement capability.

A melt pressure transducer, mounted just above the die, eliminates frictional and barrel pressure effects.

A laser micrometer for accurate mea-surements of die swell as the extru-date exits the die.

Specifications LCR 7000

Standards	DIN ISO 11433, DIN 53014, DIN 54811, ASTM D3835
Barrel	l = 200 mm (7.88“) Æ = 9.55 mm ± 0.005 mm (0.376“ ± 0.0002“)
Drive System	DC Servomotor
Piston Speed	0.03 to 600 mm/min
Dynamic Range	20,000:1
Testing Force	10 kN standard (resolution 0.2N) 15 kN (optional)
Force Measur.	Load cell and barrel mounted pressure transducer
Dies	Tungsten carbide capillary, many L/D ratios available
Die Swell Measurement	Laser-Micrometer (optional)
Temp. range	up to 430 °C Standard
Temp. control	4 zone electric heater
Temp. sensor	4-wire Platinum RTD
Temp. control	Adaptive PID-temperature-control-algorithm with 0.1 °C resolution
Temp. accuracy	+/-0.2 °C at 13 mm (0.50“)
Power Supply	115/230 VAC, 50/60 Hz
Power consum.	750 W max, 200 W typical

Data Processing System: PC based
System Software: LAB KARS for Windows™
(Kayeness Advanced Rheology Software)

LAB KARS Features:

- Bagley and Rabinowitsch Corrections
- Carreau, Modified Cross, Power Law and Polynomial curve fits,
- Arrehnius Temperature fit
- Statistical error estimation
- Shear rate dependence
- Time at temperature relationship
- Critical shear stress
- Zero shear viscosity
- Intrinsic Viscosity correlation

Model and Options

Model	**Description**
LCR7000	LCR 7000 capillary rheometer with load cell, barrel mounted pressure transducer and long barrel
Option	**Description**
GP8000MR	Personal computer with LAB KARS for Windows™ software installed
LAB KARS	Kayeness Advanced Rheology Software requires personal computer with math coprocessor. (Check with DYNISCO for system compatibility).
GP7984C	Color Printer
6052-130	Alloy barrel and piston tip for testing corrosive materials
8052P-155	Cleaning tool kit for pressure port
8052-97K	High speed barrel bore cleaning kit
D7990	Electronic load cell calibration kit
D8052DS	Laser micrometer die swell measuring system
GRAN	High speed mini granulator
BTP1000A	Probe for barrel temperature calibration

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