



# FALLING BALL VISCOMETER KF10 (DIN 53015)



The Falling Ball Viscometer KF10 is based on the measuring principle by Høepler. It enables simple but precise measurements of the dynamic viscosity of light-transmissive Newtonian liquids. It is preferably used in research, in processing control and in quality control.

For the measurement of low viscosities and for the control of pseudoplastic behaviour the measuring range (DIN 53015) is extended by optional adjustment of the working angle.

A special glass ball is added for measuring the viscosity of gases and vapours.

## TECHNICAL DATA

Viscosity range	0.5 to 7 x 10 <sup>4</sup> mPa s
for running time of the ball less than 300 s	> 7 x 10 <sup>4</sup> mPa s
with glass ball for gases	< 0.5 mPa s
Accuracy of measurements	0.5 to 2 % (dependent on ball used)
Material of balls	balls 1–2 borosilicate glass
	balls 3–4 Ni-iron
	balls 5–6 steel
Diameter of balls (DIN 53015)	11.00 to 15.81 mm
Diameter of special ball	15.91 mm
Diameter of measuring tube (DIN 53015)	15.95 mm
Running time of balls	30 to 450 s
Length of measuring distance	100 mm (50 mm) in both running directions
Working angle	according to DIN (10 % vertical)
Extended working angles	70°, 60°, 50° towards level
Temperature range	-60°C to 150°C
Filling volume	40 ml
Dimensions (width, height, length)	180 x 220 x 330 mm
Weight	30 N (3.1 kg)

## APPLICATION

### Petroleum industry

- ↳ light crude
- ↳ machine oil
- ↳ crude petroleum

### Fuels

- ↳ petrol
- ↳ diesel oil
- ↳ paraffin

### Paper industry

- ↳ emulsions
- ↳ pigment dispersions
- ↳ paper additives

### Polymer chemistry

- ↳ polymer solutions
- ↳ resin solutions
- ↳ adhesive solutions
- ↳ latex dispersions

### Paints and varnishes

- ↳ printing inks
- ↳ varnishes
- ↳ water lacquers
- ↳ inks

### Detergents

- ↳ liquid washing agents
- ↳ washing-up liquids
- ↳ tenside solutions

### Cosmetic/Pharmacy

- ↳ emulsions
- ↳ suspensions
- ↳ solutions
- ↳ extracts

### Food industry

- ↳ honey
- ↳ fruit juice
- ↳ beer
- ↳ milk

### Gases and gas mixtures

## DELIVERY

Falling ball viscometer with ball set and 1 ball gauge  
Control thermometer (glass) 0 to 100 °C

## ACCESSORIES AND PERIPHERAL EQUIPMENT

### Accessories for measuring the viscosity of gases

- ↳ special ball
- ↳ glass tap
- ↳ rubber stopper

### Special accessories

- ↳ ball collecting device for emptying the drop tube
- ↳ glass filter

### Glass thermometer for special ranges of temperature

- |                 |              |               |
|-----------------|--------------|---------------|
| ↳ -61 to -19 °C | 0 to 100 °C  | 39 to 61 °C   |
| ↳ -21 to 1 °C   | 19 to 21 °C  | 59 to 81 °C   |
| ↳ -1 to 21 °C   | 19 to 41 °C  | 29 to 101 °C  |
| ↳               | 99 to 126 °C | 124 to 151 °C |

### Liquid thermostat

### Normal and calibrating liquids

### Stop watch for time measurements (0,01 s)

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# VISCOMETERS

## RC01 / RC02

**FOR FAST VISCOSITY MEASUREMENTS  
(BROOKFIELD METHOD)**



model RC01-R with Brookfield spindles

**RheoTec models RC01 and RC02** are rotational viscometers for easy and fast viscosity determination as specified in ISO 2555 and other ASTM standards. These standards define a viscometer to be used in torque, rotational speed and spindle design. The viscometers RC01/RC02 (versions L or R) comply with the provided instrument specifications and are therefore 100% **compatible to the Brookfield method**.

These instruments with an easy-to-clean geometry give the opportunity to do precise and time-saving single point measurements in daily routine as well as to perform advanced viscosity determinations in research and development.

## SPECIAL FEATURES

- clear keypad allows a simple menu navigation
- digital display for direct reading of diverse parameters
- complete Brookfield spindle set (torque range versions L or R)
- temperature sensor Pt100 for flexible installation
- warning signal of under- or over-range condition
- interface RS232 for data transfer to PC
- bidirectional interface RS232 for RC02 control and PC data evaluation
- robust carrying case for viscometer and standard accessories (incl. spindle rack, spindle guard and manual)

## REQUIREMENTS

mains	100 – 240 V / 50 – 60 Hz
room temperature	10° C – 40° C
relative humidity	< 80%

## DISPLAY PARAMETERS

rotational speed	rpm
spindle no. (used geometry)	S.P.
dynamic viscosity	mPas or cP
scale (Brookfield)	%
sample temperature	°C or °F
auto range (max. viscosity)	mPas or cP
shear rate S.R.	1/sec
shear stress S.S. (at RC02 models)	N/m <sup>2</sup> or dyne/cm <sup>2</sup>

## OPTIONAL ACCESSORIES

- Adapter for Small Sample Volumes
- Adapter for Low Viscosity Materials
- Helipath stand
- software VISCOSOFT BASIC  
(measurement presentation, data evaluation)
- software RHEOSOFT PLUS  
(viscometer control, data management)

## SPECIFICATIONS

### rotational speeds

0.3 – 0.5 – 0.6 – 1 – 1.5 – 2 – 2.5 – 3 – 4 – 5 –  
6 – 10 – 12 – 20 – 30 – 50 – 60 – 100 – 200 rpm  
accuracy: > 0.5% of absolute value

### spindles

version L: 4 spindles (L1 – L2 – L3 – L4)  
version R: 6 spindles (R2 – R3 – R4 – R5 – R6 – R7)

### viscosity ranges

version L: 3 – 2.000.000 mPas in 76 ranges  
19 speeds with 4 spindles  
(for low to medium viscosity test fluids)  
version R: 20 – 13.000.000 mPas in 114 ranges  
19 speeds with 6 spindles  
(for medium to high viscosity test fluids)

accuracy: ± 1% of full scale

repeatability: ± 0.2%

### temperature sensor

temperature range: -15° C to +180° C (5° F to 356° F)

resolution: 0.1° C (0.1722° F)

accuracy: ± 0.1° C

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# RHEOMETER RC 1

PORTABLE AND MORE



Measuring equipment RC1



Rheometer

The Rheometer RC 1 is a rotational viscosimeter (Searle principle) for mobile use and laboratory operation. The highly dynamic measuring drive system enables rotational tests where the shear rate and the shear stress are pre-set (CSR and CSS), and creep tests. The electronic unit, the keyboard, the measuring drive system and the measuring bob coupling are integrated in a portable housing.

## SPECIAL FEATURES

- build-in rechargeable battery and mains power
- parallel display of 4 optional parameters of viscosity, temperature, torque, shear rate, shear stress, rev (on a 4 line alphanumeric display)
- dust proof keyboard
- torque overload protection
- storage of the measuring conditions pre-set when Rheometer is switched off
- data buffering in the RAM for mains and battery operation
- serial interface for printer and personal computer
- user-friendly software RHEO for using the Rheometer and for evaluating and displaying the data measured

## OPTIONAL TEST MODE

- CSR - rotational test with **shear rate pre-set (manually and via personal computer)**  
Shear rate levels pre-set according to ISO 3219 defined speed and shear rates
- CSS - rotational test with shear stress pre-set (in connection with a computer system)
- Creep test (in connection with a computer system)

## MEASURABLE AND EVALUABLE QUANTITIES

Viscosity  
Shear Rate  
Shear Stress  
Speed  
Torque  
Temperature  
Time

## TECHNICAL DATA

Torque range mains power	50 mNm
Torque range battery power	20 mNm
Torque resolution	0,01 mNm
Angle range	0,8 mrad
Speed range	0,7 to 800 min <sup>-1</sup>
Viscosity rate range mains power*	10 <sup>-3</sup> to 3 x 10 <sup>3</sup> Pa s
Viscosity rate range battery power*	10 <sup>-3</sup> to 1,2 x 10 <sup>3</sup> Pa s
Shear rate range*	0,9 to 4 x 10 <sup>3</sup> s <sup>-1</sup>
Shear stress range mains power*	0,7 to 3,4 x 10 <sup>4</sup> Pa
Shear stress range battery power*	0,7 to 1,3 x 10 <sup>4</sup> Pa
Accuracy	± 1 % of maximum value
Temperature range	-20 °C to 180 °C
Temperature measuring	Pt 100 1/3 DIN
Power supply	100 to 240 V Alternating current, 20 W

\* dependent on measuring system used

## ATTACHMENTS

- Thermostat for cylinder measuring systems
- Resistance thermometer Pt 100
- Standard cylinder and double-gap measuring systems (DIN), also as one-way measuring systems
- Optional measuring device for cone/plate and plate/plate measuring systems
- Peltier-thermostatic device for cone/plate and plate/plate measuring systems
- vertically adjustable stand
- battery charger and case
- rechargeable battery for mobile use

## ADDITIONAL EQUIPMENT

Personal Computer/Printer  
Liquid thermostat  
Normal and Calibrating liquid

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