



Rotary Viscometers

Rotary viscosimeters "ST-2020"

INTRODUCTION

Rheology is the study of the effects experimented in a substance when a mechanical force is applied on it (flow and deformation) under different external conditions. It is used to describe the consistency of different products and is normally defined by the components: **viscosity and elasticity**.

Measuring viscosity is determined by the tangible force required to displace the materials particles with a specific deformation-flow i.e. velocity. The relationship between the tangible force and the deformation flow obtains the viscosity result. Ambient conditions such as temperature and pressure also have an effect on viscosity.

The measurement of viscosity is not just limited to the research laboratory, it has progressively entered the field of industrial quality control.

PRINCIPLES OF VISCOSITY

These instruments operate by means of a cylinder or disk (spindle) that is submerged into the material to be analysed and by measuring the resistance of the substance at a selected known speed. This resistance results is the measurement of the viscosity according to the flow characteristics of the reference spindle; the instrument calculates the result and directly displays the viscosity that is reported in **cP (CGS)** or **mPa-s (SI)**.

A wide range of viscosity can be measured using viscometers that are equipped with different types of spindles and speed ranges. The design of the spindles and the principals of measurement principles are regulated by **ISO 2555** and **ISO 1652** standards. All spindles are made of AISI 316 stainless steel. Each spindle can be identified by a letter and a number.

SELECTION TABLE

Standard measuring range of the viscometers, without additional accessories		
Part no	1001616	1001617
Model	ST-2020 L	ST-2020 R
Units	centiPoise (cP)	centiPoise (cP)
Standard spindle	L1 to L4	R2 to R7
Speed range r.p.m.	1 to 60	0,1 to 100
Measuring range	20 to 600.000 cP	20 to 40.000.000 cP
Temperature range °C	0,0 a 100,0	0,0 a 100,0
Power requirement	115/230V to 12VDC 1.2A	115/230V to 12VDC 1.2A
Power	15 W	15 W
Weight	5 Kg	5 Kg

FEATURES

L.C.D. display of parameters and results:

- Selected speed r.p.m.
- Selected spindle. S.P.
- Viscosity result cP (mPa-s) or cSt.
- Base scale percentage%
- Sample temperature:°C or ° F.

Auto alarm in the case of any fault being detected.

Off scale detection and indication by an audible and visual signal.

Step controlled speed to prevent spindle vibrations.

Velocity from 0,1 to 100 r.p.m.

Mains power surge protection.

RS 232 unidirectional interface, download to a computer.

DIGITAL THERMOMETER SPECIFICATIONS

Temperature range:- from 0.0 °C to + 100.0 °C

(+ 32.0 °F to + 212.0 °F).

- Resolution: 0.1 °C (0.1722 °F).

- Precision: ± 0.1 °C.

TECHNICAL DATA

Direct results in cP(mPa-s) or cSt.: models ST-2010 L & R.

Direct results in Poise (Pa-s) or St.: model ST-2010 H.

Precision: ±1% base scale.

Measuring range: See table

Repeatability: 0.2%.

Supplied complete with:

- Anti shock carry case.
- Main unit.
- Support base.
- Spindle protector.
- Spindle support.
- Set of spindles (model dependant)
- Temperature probe

Small sample volume adapters.

Suitable for models ST-2020L and ST-2020R.

Suitable for sample volumes from 10 to 20 ml.

With water jacket. If constant temperature is required, this adapter has a water jacket that can be connected to an external re-circulation equipment suitable for temperatures from 0 °C to +100 °C.

Part No. **1000996** Small sample adapter with water jacket. (Special spindles included).

Low viscosity adapters.

Required to improve low viscosity measurements.

Newtonians and no Newtonians.

Reproducible results and measurements of viscosity from 1 cP.

Suitable for models L and R for viscometers ST-2020.

Sample volume: 25 to 30 ml.

Includes special spindle.

Without water jacket.

Part No. **1000997** Adapter without water jacket.



NEW DESIGN

RS232

Model ST2020L



Rack of standard spindles L1, L2, L3, L4 : Suitable for models L.



Rack of standard spindles R2, R3, R4, R5, R6 and R7: Suitable for model R.

ACCESSORIES

Spindle R1 suitable for low viscosity samples.

Fits model R.

Part No. **1000995**.



Spindle R1



Part No. 1000996



Part No. 1000997