

Precision Capillary Viscometer System

Full method compliance combined with the convenience of completely automated measurement.

Suitable for measuring the viscosity of new oils, residual fuels and distillate fuels, as well as used oils in full compliance with IP 543. Instrument performance meets precision criteria of ASTM D 445, IP 71, ISO 3104, ASTM D445, ASTM D 2270 & ASTM D2161.



The RHEOTEK AV-2 Analyzer, RSS Autosampler can be accommodated on top or to one side.

ANALYZER FEATURES:

- Precise NIR detection
- Transparent, opaque & black oils
- Wide viscosity range
- Two measuring positions
- Viscosity Index
- 54 position RSS Autosampler
- Built in PC with powerful database

ADVANTAGES:

- IP & ASTM Round Robin precision
- Automatic sample handling
- Automatic flow time measurement
- Automatic cleaning & drying
- User friendly WINDOWS software
- Large database capability, LIMS ready
- No oil baths
- No expensive glassware

APPLICATION FEATURES:

- 2 separate sample paths
- Plastic or glass sample vials
- Sample pre-heating
- Simultaneous analysis at 40°C & 100°C
- Distillates & residuals in the same rack
- ASTM viscosity standard calibration
- Entire sample path solvent cleaned
- Graphic diagnostics screens

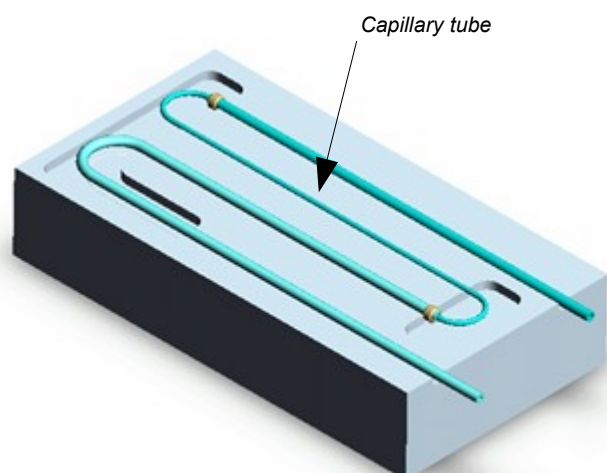


PRINCIPLE OF OPERATION

At the heart of the AV-2 are two traditional capillary tubes, which determine viscosity by measuring flow times. This ensures optimal precision of measurement but without the inconvenience of maintaining a liquid bath. Instead, the AV-2 RSS combines advanced multi-processor systems, accurate thermal control, super sensitive micro-detectors and very efficient in-situ automatic cleaning system. The instrument is specially well suited to measure black oils and residual fuels.

PRECISION

The RHEOTEK AV-2 is fully compliant with standard test method IP 543 - *Determination of the dynamic viscosity of distillate & residual fuel oils and calculation of kinematic viscosity - Automatic capillary tube method*. This method shows that there is good correlation between viscosities determined by the automatic capillary tube method and IP 71, ISO 3104 & ASTM D 445 manual kinematic viscosity results.



The AV-2 measures the flow time of a sample through a reverse flow capillary tube. Each viscometer is housed in an electronically heated/cooled module controlled to $\pm 0.01^{\circ}\text{C}$. This image shows the bottom half of a measuring block.

VISCOSITY & DENSITY

The AV-2 measures flow times & determines viscosity in mPa.s. In addition some models determine density to a precision of four decimal places. The two measured values are used to report kinematic viscosity in mm^2/s , cSt. The result database records all measurements and calculations in order to provide complete traceability of results.

RESULTS DATABASE

The RHEOTEK AV-2 is equipped with a very powerful database for extensive management of measurement results. A number of different filtering and sorting options are available for automatic generation of reports. The flexible software allows for the PSL installation engineer to configure this function according to the reporting requirement of the individual laboratory.



The AV-2 is available in 6 standard models based upon the following applications:

NEW & USED LUBRICANTS

AV-2 Lubricants

Suitable for measuring the kinematic viscosity of new and/or used lubricating oils at 40 and 100°C. Each sample is measured at 40 and 100°C simultaneously. Reported results include kinematic viscosity and Viscosity Index.

DISTILLATE AND RESIDUAL FUELS

AV-2 40/50 Fuels

Suitable for measuring the kinematic viscosity of distillate fuels (diesel and gas oil) at 40°C and residual fuel oil at 50°C. Two samples are measured simultaneously. Distillates are run first on both viscometers with the temperature set to 40°C. The temperature can be changed to 50°C with both viscometers testing residual fuel oils.

AV-2 Refinery Fuels

Suitable for measuring the kinematic viscosity of distillate fuels (diesel and gas oil) at 40°C and residual fuel oil at 50°C, 80°C or 100°C.

Distillates run on viscometer 1 and residual fuel oils on Viscometer 2. Viscometer 2 can be set to 50°C, 80°C or 100°C depending on what temperature the laboratory requires.

AV-2 RFO

Suitable for measuring the kinematic viscosity of residual fuel oil at 50°C, 80°C or 100°C. Two samples are measured simultaneously.

Separate auto sampler needles load simultaneously from two sample vials. Viscometer 1 & 2 operate at the same temperature in the range 50°C to 100°C.

USED MOTOR OILS

AV-2 UMO(40)

Suitable for measuring the viscosity of used motor oil at 40°C. 2 samples are measured simultaneously. The AV-2 is optimized for high sample throughput with a small sample volume (<5ml). Separate auto sampler needles load from two sample vials simultaneously. Viscometer 1 & 2 operate at 40°C.

AV-2 UMO (100)

Suitable for measuring the viscosity of used motor oil at 100°C. 2 samples measured simultaneously. The AV-2 is optimized for high sample throughput with small sample volume (<5ml). Separate auto sampler needles load from 2 sample vials simultaneously. Viscometer 1 & 2 operate at 100°C.



Technical specifications AV-2

Operating temperature	40....100°C
Viscosity Range:	
40°C	1 to 1000 mm ² /s, cSt
50°C	1 to 900 mm ² /s, cSt
100°C	1 to 75 mm ² /s, cSt
Kinematic Viscosity test methods	IP 543 full compliance, ASTM D 445 precision
Viscometer tube	AV-2 Reverse flow suitable for transparent & opaque liquids, including black oils.
Sample volume (new oils)	22 ml or less for dual temperature analysis,
Sample volume (used oils)	< 5ml for used oil measurement (fast mode)
Cleaning	In-situ automatic cleaning. Cleaning solvent miscible with sample followed by drying solvent. Optimized cleaning parameters to minimize solvent usage whilst providing a thorough cleaning
LIMS	Compatible
Electrical:	220-240V, 50Hz or 110V, 60Hz. Other on application
Dimensions:	AV-2 Analyzer: w x d x h: 80 x 69 x 40 cm Autosampler: w x d x h: 54 x 44 x 60 cm
Weight:	AV-2 Analyzer: 45 Kg Autosampler: 19 Kg
Utilities:	Electricity, compressed air required
Manufacturer:	Poulsen, Selfe & Lee Ltd., United Kingdom

AV-2 Model	Temperature °C
AV-2 Lubricants	40 & 100
AV-2 40/50 Fuels	40 or 50
AV-2 Refinery Fuels	40 & 50 40 & 80 40 & 100
AV-2 RFO	50 & 50 80 & 80 100 & 100
AV-2 UMO 40	40 & 40
AV-2 UMO 100	100 & 100

For specific advice on your petroleum application and a quotation, please contact your nearest RHEOTEK office or local agent.



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