1.5 AVS® 370

AVS® 370 makes maximum precision easier and more flexible, with provision for future expansion!

Well equipped for all viscosity determination

The AVS® 370 is a PC-controlled measuring device, which not only measures as precisely and consistently as you expect, but also offers maximum flexibility and future extensions. Furthermore, it saves laboratory space.

- Suction and pressure mode - with one device

The AVS® 370 is operating with the ViscoPump III as the control unit for measurement and rinsing and therefore is able to pump the sample liquid in two different ways: by "suction" as well as by "pressure".

This makes it possible to simple adapt the method of measurement to different samples and applications: E.g. for non-critical samples as pharmaceutical solutions, we recommend to use the classic pressure mode. In pressure mode, at first the viscometer is filled and afterwards the filling and venting tube of the viscometer are connected to the ViscoPump. By applying pressure, the liquid is pumped to the measuring bulb.

The pressure mode is recommended for high-volatile solvents, as evaporation is lower compared to solvent mode. The viscometers have to be discharged and cleaned manually.

In suction mode, the sample liquid is pumped by vacuum up through the capillary. One main advantage is, that liquid can not leave the system. Therefore this method is often applied for hazardous samples.

For such samples, e.g. in polymer analytics, it is often requested to reduce liquid handling as much as possible, and therefore also the manual cleaning of viscometers. For these applications we recommend a waste system, combined with the AVS® 370, which makes manual discharge and cleaning of viscometers obsolete.

When combined with a waste system, the AVS® 370 exclusively is working in suction mode: due to increased safety, and the fact that in suction mode the filling tube of viscometer keeps open, which is required for sample filling.

Advantages AVS® 370

- Automatic and highly precise measurements
- "Suction" and "pressure" measurements with the same module
- Modular concept for up to four ViscoPump III modules in one AVS® 370
- Each ViscoPump III module in a AVS® 370 can measure a different sample using a different method.
- Real multitasking for up to eight parallel measurements with the software WinVisco 4
- TC version for measurement of nontransparent and black liquids

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As a further advantage, the suction mode exhibits increased reproducibility of flow times in case of Ubbelohde viscometers and samples which tend towards foaming: The bubbles are created during pumping of the liquid to the measuring bulb, when air is mixed with the small amount of liquid remaining in the lowest part of the capillary. In suction mode, the liquid can be blown out by a special function of software WinVisco 4.

Two detection methods to measure flow times

To measure the flow time, the liquid meniscus can be detected by optoelectronics or thermally, by TC sensors. In both cases, the flow time is displayed with an resolution of 0.01 s.

Using optoelectronic detection, the liquid meniscus is registered by using IR light barriers; for detection with TC sensors, the different thermal conductivity of air and sample is utilized. With these options, the AVS370 covers a broad range of applications, including transparent and opaque samples as well.

Easy modular concept ideal for future expansion

The AVS® 370 has a modular design. The basic version is available with one ViscoPump III module in optical or in TC version. Up to 3 other ViscoPump III modules can be installed in the compact housing. The measuring station can be adapted to increasing requirements at any time.

Can be expanded from an affordable single measuring station up to an 8-sample station

The basic version of the AVS® 370 is able to measure the viscosity of liquids automatically. The TC version viscometers, it is ideal for measuring opaque and black fluids. If necessary, each single measuring station can be expanded to a multiple measuring station with up to eight measuring positions. The WinVisco 4 software included with the standard equipment enables parallel operation of two fully equipped AVS® 370, with a total of eight ViscoPump III modules. Each module can measure a different sample using its own method. All the results can be quickly and easily evaluated and documented independently. It could hardly be more flexible!

Waste system and rinsing

As mentioned above for the suction mode operation, the AVS® 370 can be combined with a waste system.

When using a waste system, after measurement the sample is discharged from the viscometer into a waste bottle - the viscometer is rinsed while keeping installed. The manual cleaning of the viscometer becomes obsolete, and the effort for dis- and reassembling to the measuring stand as well.

For 1 and 2 measuring positions, we offer the AVS®370 as a package, containing all components including measuring stands, thermostat bath, recirculating cooler, safety sensors, filling and waste system with discharge pump, complete hose sets and PC software.

Compatible with existing accessories

Possibly existing accessories (thermostats, stands, flow through cooler, etc. von Vorgängermodellen) can continue to be used with the AVS® 370. Also, virtually all customary SI Analytics®-capillary viscometers can be used.

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AVS® 370 – the right solution for all situations

Working with AVS® 370 is easy

The entire measurement procedure is place automatic, subjective measuring errors are reliably eliminated. The PC starts the measurement. After the set preconditioning period the selected number of Durchflusszeiten gemessen and the measured values saved.

The system protects against accidental overpumping or oversuction by means of a capacitive sensor. This prevents the sample to be measured from getting into the vessel containing the liquid or inside the device.

Unique flexibility

In the PC-controlled multiple measurement station, the AVS® 370 offers unique flexibility while working in a very small space: Up to eight ViscoPump-modules, which equates to two fully equipped AVS® 370, can be run in parallel with the WinVisco 470 software.

Each module can measure the same or different samples using "pressure" or "suction", independent of each other. This significantly reduces the time required to carry out viscosity measurements im Parallelbetrieb, especially for in process controls and quality assurance. In this way, a series of measurements can be prepared quickly and immediately evaluated and documented with the computer.

Technical data

Measuring range (time)	up to 9,999.99 s; resolution 0.01 s	
Measuring range (viscosity)	pressure:	0.35 to 1,800 mm²/s (cSt)
	suction:	0.35 to ~5,000 mm²/s (cSt)
Measured parameter	flow through time [s]	
Accuracy of the time measurement	± 0.01 %	
Measured value display	via PC	
Display accuracy	± 1 digit (0.1 %)	
Pump pressure	automatically controlled	
Preselectable tempering period	0 to 20 min	
Preselectable number of measurements	up to 10	
Connections	Pneumatic connections	threaded connections for viscometers
	Electrical connections	circular connector with bayonet lock for measuring stands and TC viscometers
	RS232-C interface	9-pin
	Mains connections	plug in accordance with EN 60320
	Pump connection	socket outlet in accordance with EN 60320
Data Input/Output	serial to EIA RS232-C	
Ambient conditions	Ambient temperature	+ 10 to + 40 °C
	Air humidity	max. 85 % rel.
Housing	Material	coated aluminum plate
	Dimensions (for 1 to 4 modules)	(W x H x D) ~255 x 205 x 320 mm
	Weight (incl. 1 module)	~5.4 kg
Power supply	90 to 240 V ~, 50 to 60 Hz	
Equipment safety	EMC-Compatibility according to the Directive 89/336/EEC of the Council	
	low-voltage directive according to the Directive 73/23/EEC of the Council	
	as amended by the Directive 93/68/EEC of the Council	
Multi-tasking	for 1 to 8 ViscoPump III modules, with WinVisco 4 software	

Ordering information AVS® 370

The AVS® 370 viscosity test station is composed of individual components.
Please request a detailed quote.

Typ-Nr.	Bestell-Nr.	Beschreibung
AVS® 370 basic unit for opto-electronic detection	1056509	AVS® 370 basic unit, housing incl. one ViscoPump III-Moduls and Software WinVisco 370 software, for opto-electronic sensing
AVS® 370 basic unit for TC detection	1056515	AVS® 370 basic unit, housing incl. one ViscoPump III-Moduls and Software WinVisco 370 software, for TC sensing

Accessories for AVS 370® and AVS 470® you can find at page 49 and following.

The following viscometers can be used with the AVS® 370:
Ubbelohde viscometer to DIN, Ubbelohde viscometer to ASTM, micro Ubbelohde viscometer to DIN, micro Ostwald viscometer, Cannon-Fenske routine viscometer, TC-Ubbelohde viscometer, TC-micro Ubbelohde viscometer.

We reserve the right to make technical changes.
AVS® is a registered trademark of SI Analytics and stands for: "Automatic Viscosity System".

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