

# ViscoSystem® AVS 370 makes maximum precision ...

# AVS 370

## Well equipped for every viscosity determination

With the ViscoSystem® AVS 370 we have created a measuring device, which not only measures as precisely and consistently as you expect from SCHOTT Instruments, but also offers you maximum flexibility and possibilities for future extensions. Furthermore, it also saves valuable space on the laboratory bench.

## Now possible for the first time ever: "suction" and "pressure" measurement – with one device

The ViscoSystem® AVS 370 is the first viscosity measuring device, which can be used for both "suction" and "pressure" measurement. This enables simple adjustment of the method of measurement to each sample. This significantly reduces investment costs for measuring stations at which pressure and suction methods are to be used. In most cases, using the ViscoSystem® AVS 370 also achieves noticeable savings in setting up time.

## Easy with a modular concept for future expansion

The ViscoSystem® AVS 370 has a modular design. The basic version is available with one ViscoPump II module in optical or in TC version. Up to 3 other ViscoPump II modules can be inserted in the compact 19" housing. This means a

measuring station can be adapted to increasing requirements at any time. The modular concept also significantly reduces the space required, and measuring instrument set-ups can be more easily and clearly arranged, for example for parallel and comparison measurements.



... easier and more flexible, with provision for future extension!

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

The basic version of the ViscoSystem® AVS 370 is an affordable starter model, which can be used to measure high or low viscosity liquids. In the version for

TC viscometers, for example, it is ideal for measuring opaque and black fluids. If necessary, each single measuring station can be extended to form a multiple measuring station with PC-controlled-multitasking. The WinVisco 370 software included in the standard equipment

enables parallel operation of two fully equipped AVS 370, with a total of eight ViscoPump II modules. Each module can measure a different sample using a different method. All the results can be quickly and easily evaluated and documented independently of each other. It could hardly be more flexible!

#### Compatible with existing accessories

Existing accessories (thermostats, stands, flow through cooler, etc.) can continue to be used with the ViscoSystem® AVS 370. Also, virtually all customary capillary viscometers can be used.



The ViscoSystem® AVS 370 from SCHOTT Instruments. Up to 4 ViscoPump II modules can be integrated in the compact 19" housing. With a PC and the WinVisco 370 software, all kinds of different samples can be measured, evaluated and documented in parallel, independently of each other.

# ViscoSystem® AVS 370 – the right solution for all situations

Anyone working with the ViscoSystem® AVS 370 is perfectly equipped for all tasks involved in determining viscosity using capillary viscometers.

## How to automatically achieve the right results

PC-controlled, the ViscoSystem® AVS 370 determines the time which the liquid to be examined requires to flow through the measuring distance in the capillary viscometer with quartz precision. The time is displayed with a resolution of 0.01 s (1 digit).

Measurement of the flow time of the liquid's meniscus can be scanned optoelectronically or with TC sensors. (During optoelectronic scanning the meniscus is detected by glass light fibres, with TC sensors the sensor detects the different thermal conductivity of the sample and air.) Therefore the ViscoSystem® AVS 370 offers an extraordinary broad field of uses, which range from viscosity measurement of clear fluids through to black or fully opaque liquids.

## New: Two working principles with the same device.

For the first time ever, with the ViscoSystem® AVS 370 you can use the same device to work with "pressure" or "suction". This gives you more flexibility and better adjustment to the liquids to be examined.

In the "pressure" method of working an overpressure of up to 0.1 bar is applied to the liquid in the capillary, this is particularly advantageous for fluids with a low boiling point. In the "suction" principle the sample is sucked up into the capillary by a vacuum. A greater reproducibility of results is achieved using the "suction" method for higher viscosity samples. A further advantage of the "suction" principle is that it guarantees formation of the "hanging ball level" in Ubbelohde viscometers, even for the minimum required sample quantities.

## Working with the ViscoSystem® AVS 370 is easy

The ViscoSystem® AVS 370 is very easy to use. The whole measuring procedure takes place automatically, subjective measuring errors are reliably precluded. The PC starts the measurement. After the set pretempering period has expired the entered number of measurements are carried out and the measured values saved.

The system can be protected 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 tempering liquid or inside the device.

## "Suction" or "pressure"? A comparison of preferred applications

	"pressure"	"suction"
Highly viscous samples e.g. oils, polymers	■	■
Solvent (examples):		
highly volatile	■	–
Dichlormethane	■	–
Chloroform	■	–
Sulfuric acid	–	■
Dichloroethanoic acid	–	■
Toluene	■	■
Hexafluorisopropanol	–	■
m-cresol	–	■
Formic acid	–	■
Phenol-dichlorobenzene	–	■
Phenol-tetrachloroethane	–	■



# Technical data

## Unique flexibility

In the PC-controlled multiple measuring station, the ViscoSystem® AVS 370 offers you unique flexibility while working in a very small space: Up to eight modules, which equates to two fully equipped ViscoSystem® AVS 370, can be run parallel with the WinVisco 370 software. Each module can measure the same or different samples using “pressure” or “suction”, fully independently of each other. In this way, series of measurements can be prepared extremely quickly and immediately evaluated and documented in the computer. This significantly reduces the time required to carry out viscosity measurements, especially for in process controls and quality assurance.



<b>ViscoSystem® AVS 370</b>	
Measuring range (time)	up to 9,999.99 s; resolution 0.01 s
Measuring range (viscosity)	pressure: 0.35 ... 1,800 mm <sup>2</sup> /s (cSt) suction: 0.35 ... approx. 5,000 mm <sup>2</sup> /s (cSt)
Measured parameter	flow through time [s]
Accuracy of the time measurement	± 0.01 %
Measured value display	via PC
Display accuracy	± 1 digit (0.01 s)
Pump pressure	automatically controlled
Preselectable tempering period	0 ... 20 min
Preselectable number of measurements	up to 10
<b>Connections</b>	
Pneumatic connections	threaded connections for viscometers
Electrical connections	circular connector with bayonet lock for measuring stands and TC viscometers
RS-232-C interface	9-pin
Mains connections	plug in accordance with EN 60320
Pump connection	socket outlet in accordance with EN 60320
<b>Data Input/Output</b>	serial to EIA RS-232-C
<b>Ambient conditions</b>	
Ambient temperature	+10 ... +40 °C
Air humidity	max. 85 % rel.
<b>Housing</b>	
Material	coated aluminum plate
Dimensions (for 1 ... 4 modules)	(W x H x D) approx. 255 x 205 x 320 mm
Weight (incl. 1 module)	approx. 5.4 kg
<b>Power supply</b>	90 ... 240 V ~, 50 ... 60 Hz
<b>Equipment safety</b>	EMC-Compatibility according to the Directive 89/336/EEC of the 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
<b>Multi-tasking</b>	for 1 ... 8 ViscoPump II modules, with WinVisco 370 software

The following viscometers can be used with the ViscoSystem® 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.  
ViscoSystem® is a registered trademark.

Compact, space-saving viscosity measuring station with the ViscoSystem® AVS 370. The measuring device is attached to a support table (recommended accessory). All the connections are within view and easily controlled. If necessary the sample can be automatically sucked away and the viscometer flushed e.g. with the TITRONIC® universal or the TITRONIC® 110 plus burette.

# Ordering information ViscoSystem® AVS 370



## ViscoSystem® AVS 370

The AVS 370 viscosity measuring system is made up of individual components, which have to be individually ordered. Please always ask for a detailed offer.

Description	Order No.
ViscoSystem® AVS 370 basic unit, housing incl. one ViscoPump II module and WinVisco 370 software, for optoelectronic scanning	1056509
ViscoSystem® AVS 370 basic unit, housing incl. one ViscoPump II module and WinVisco 370 software, for TC scanning	1056515
ViscoPump II module for optical scanning, VZ 8511	1054306
ViscoPump II module for TC scanning, VZ 8512	1054304
<b>Accessories</b>	
Support table	1057903
Vacuum pump (230 V)	1057901
Vacuum pump (115 V)	1057902
Measuring stand AVS/S	28 541 0502
Measuring stand AVS/SK	28 541 0876
Measuring stand AVS/SK-CF	28 541 0892
Measuring stand AVS/SK-V	28 541 0905
Fixing frame	28 540 5043
Holder VZ 7191	28 542 1968