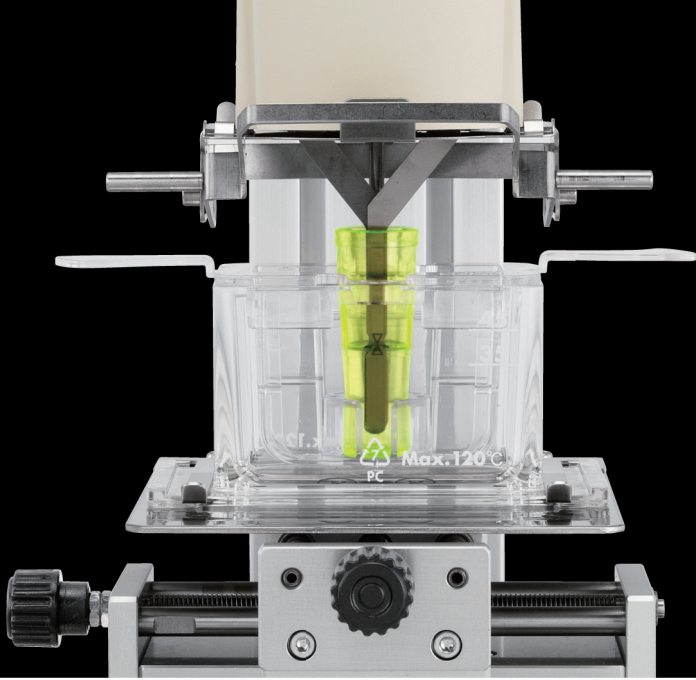


*Sine-wave Vibro Viscometer*

# SV-1A

*Series*



**2ml Sample Measurement  
Now Possible!**



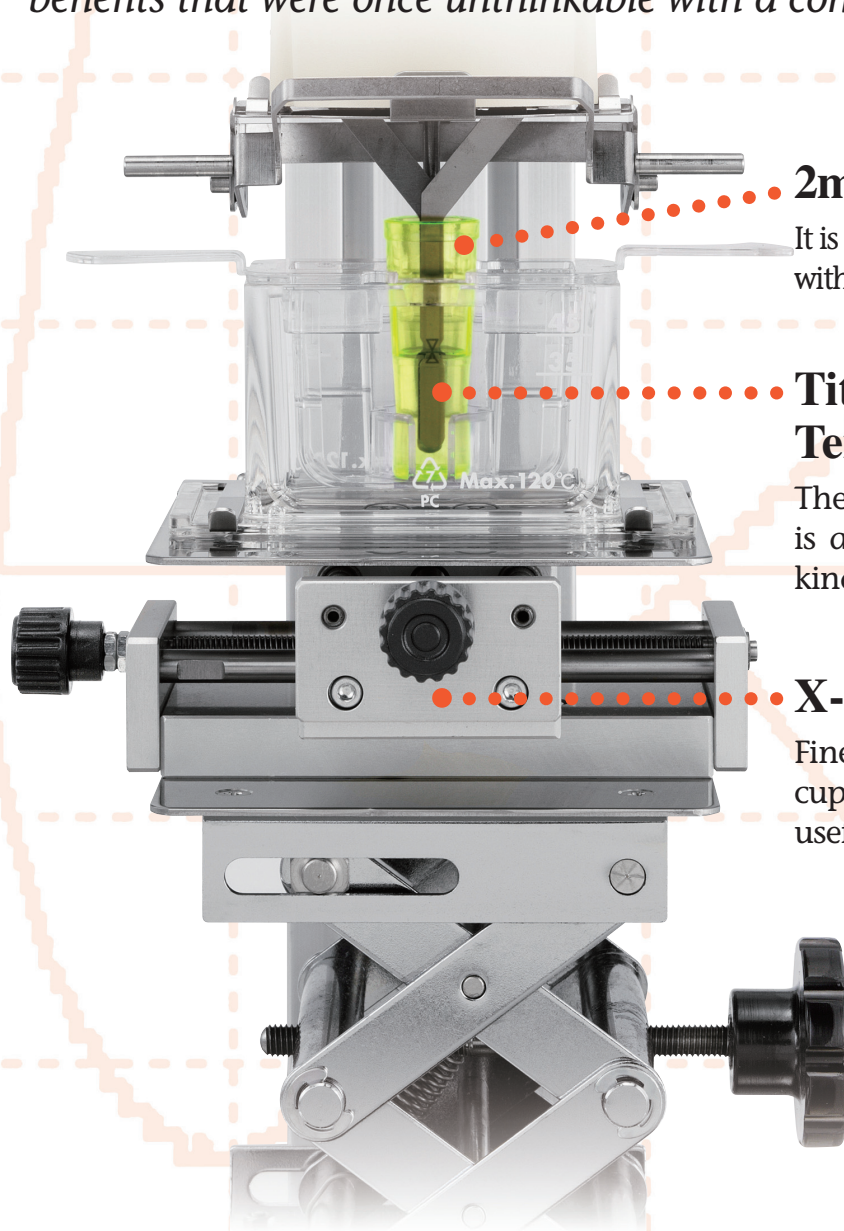
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# *A&D's own technology is setting a new standard for viscosity measurement!*

*Speed? Accuracy? User-friendly? A&D's highly sensitive, tuning-fork vibration viscometer\*, the SV-A series, not only completely satisfies these basic requirements, but does more by offering users a number of additional benefits that were once unthinkable with a conventional viscometer. \*Patent Approved*



## **2ml Sample Measurement**

It is possible to perform viscosity measurements with sample liquid as small as 2ml (SV-1A).

## **Titanium Sensor Plates and Temperature Sensor**

The sensors are made of titanium, which is anti-corrosive and resistant to various kinds of chemical substances.

## **X-Y-Z Stage**

Fine position adjustment of the sample cup in three directions. This is especially useful when the sample cup is very small.

## ***Wide-range, Continuous Measurements without Replacing the Sensor Plates***

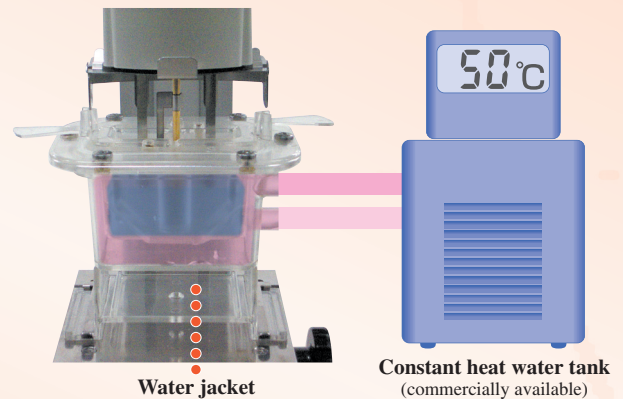
Unlike the rotational viscometer, which requires several different rotors to cover a wide range of measurements, the SV-A series is capable of using the same, fixed sensor plates to perform **continuous measurements** from **very low** to high viscosity [SV-1A: 0.3~1000mPa·s (cP), SV-10A: 0.3~10000mPa·s (cP), SV-100A: 1000~100000mPa·s (cP)].

# Simultaneous Measurements of Temperature and Viscosity

It is widely known that viscosity is very temperature dependent ( $-2 \sim -10\%/^{\circ}\text{C}$ ). The SV-A series has a temperature sensor ( $0 \sim 160^{\circ}\text{C}$ ) right next to the viscosity sensor plates, enabling users to easily monitor the relationship between viscosity and temperature.

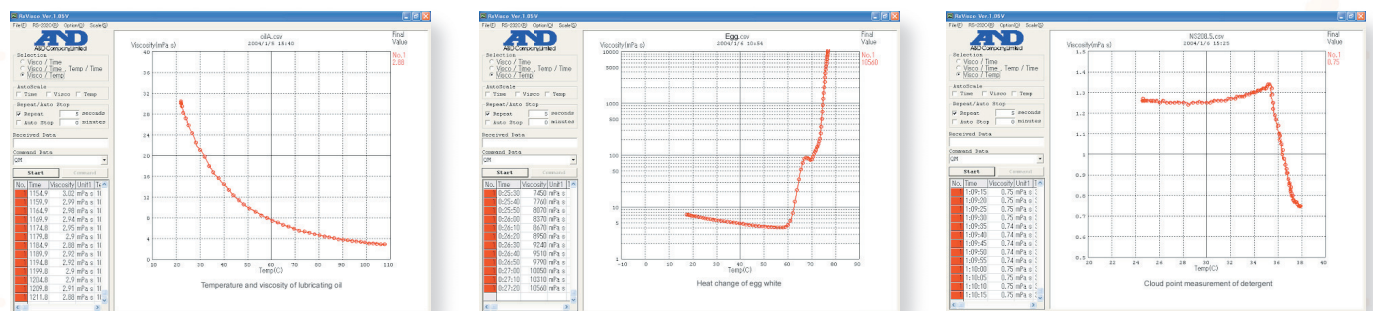
## Sample Temperature Control

A water jacket is provided as standard to be used in conjunction with a commercially available constant heat water tank to heat the circulating system. This ensures that the sample remains at a constant temperature and that the temperature can be changed for viscosity measurement ( $0 \sim 100^{\circ}\text{C}$ ).



## Standard Windows Communication Tools WinCT-Viscosity and a Serial-USB Converter

The graphing program RsVisco receives the viscosity and temperature data from the SV-A series and creates a graph on a personal computer **in real time**. As such, changes in viscosity and temperature over time as well as the correlation between viscosity and temperature can be observed visually.



Temperature and viscosity of lubricating oil

Heat change of egg white or Log display

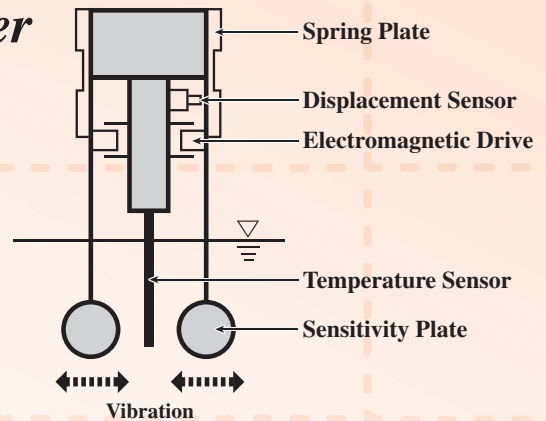
Cloud point measurement of detergent

## Example Applications

- Measure the viscosity necessary for the correction of particle size distribution
- Control the viscosity of resist liquids, inks, coating materials, adhesives, etc.
- Control the viscosity of abrasives for semiconductors, ceramic materials, etc.
- Measure the cure processes of polymers, soldering flux, proteins, and gelation point, etc.
- Detect the cloud points of nonionic surface-active agents
- Measure viscosity variation due to changes in temperature of a lubricant, engine oil, food, etc.
- Quantify the "swallowability" of beverages
- Quantify the physical properties of biological substances, such as blood, etc.

## Tuning-fork Vibration Viscometer

The tuning-fork vibration viscometer has a pair of thin sensor plates of the same natural frequency, which are driven with electromagnetic force to vibrate at the same amplitude. The viscosity produced between the sensor plates and the sample liquid is detected based on the amount of electronic current required to drive the sensor plates and maintain them at a constant amplitude.



- The vibration viscometer is accredited as a Japan Calibration Service System (JCSS) standard device by the National Institute of Technology and Evaluation (NITE), along with the capillary viscometer and the rotational viscometer.
- The sensor plates have very small thermal capacity and cause only minute displacement in the sample liquid, which prevents changes to the temperature and the physical properties of the sample.
- Since the two sensor plates vibrate in reverse phase, it is possible to measure the viscosity of a sample while flowing or being stirred.

### Very Quick Measurement

The initial viscosity coefficient will be indicated **just 15 seconds** after starting the measurement. The measured values will then be displayed in real time in response to the changes in viscosity.

### High Accuracy

The SV-A series achieves an excellent repeatability of 1% of reading over its full measurement range.

### Low Viscosity Measurement

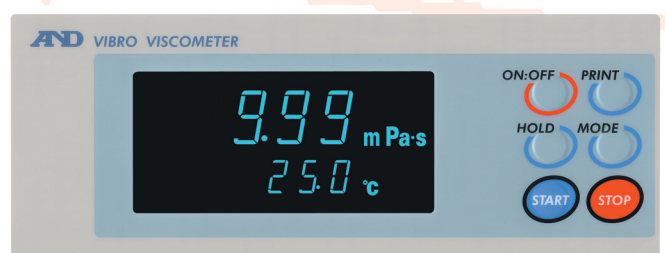
No other viscometer is capable of measuring viscosity from as low as 0.3mPa·s. (SV-1A/10A)

### Easy Calibration

Both one-point and two-point calibrations are possible using either viscosity standard liquids (optional) or samples of known viscosities. **Simplified Calibration function**, a one-key operation that utilizes purified water is also available for the SV-1A/10A.

### Clearly Visible Display

Easy-to-read VFD for viscosity and temperature. Only 6 keys for simple operation.



## Portable Sensor Unit

The sensor unit can be detached to perform measurements on location at a manufacturing factory, field research, etc. A portable carrying case is also provided as standard.



### Standard Cup Set for SV-1A (AX-SV-55)

Sample cup:

45 ml, Polycarbonate × 5 pcs

2 ml, with lid, Polycarbonate × 10 pcs

2 ml, Glass × 10 pcs

2ml sample cup holder, Polycarbonate:

Transparent × 3 pcs

Black × 2 pcs

2ml sample cup stand × 1 pc

Water jacket × 1 pc



### Standard Cup Set for SV-10A/100A (AX-SV-54)

Sample cup:

45 ml, Polycarbonate × 5 pcs

10 ml, with cover, Polycarbonate × 5 pcs

13 ml, Glass × 2 pcs

Glass sample cup holder, Stainless steel × 1 pc

Water jacket × 1 pc



### Anti-Vibration Table AD-1685 (optional)

Depending on the measurement location, the highly sensitive tuning-fork vibration sensor can be influenced by low-frequency vibrations that cannot be detected by humans. AD-1685 effectively isolates such adverse vibrations from the viscometer to guarantee stable and accurate measurements.



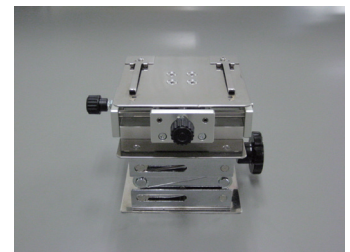
## Specifications

	SV-1A	SV-10A	SV-100A
Measurement Method	Tuning Fork Vibration Method (Natural Frequency at 30Hz)		
Viscosity Measurement Unit	mPa·s, Pa·s, cP, P		Pa·s, P
Viscosity Measurement Range	0.3~1000mPa·s	0.3~10000mPa·s	1~100Pa·s
Repeatability	1% of Reading (S.D., 20~30°C, No condensation)		
Accuracy	±5% (1~100mPa·s)	±3% (1~1000mPa·s)	±5% (1~10Pa·s)
Minimum Sample Amount	2ml~	10ml~	
Temperature Measurement	0~160°C / 0.1°C (32~320°F/0.1°F)		
Display	Vacuum Fluorescent Display (VFD)		
Power Supply	AC Adaptor (Approx. 14VA)		
External Dimensions / Mass	Main Unit: 112 (W)×132 (D)×291(H) mm / Approx. 0.8kg Display Unit: 238 (W)×132 (D)×170(H) mm / Approx. 1.3kg		
Standard Accessories	Stand for Securing the Sensor Unit, X-Y-Z Stage, Cup Set Software Set (including a Serial-USB Converter) AC Adaptor, Connection Cable (1.5m), Carrying Case		

## Options

Item	Description	SV-1A	SV-10A	SV-100A
AX-SV-33	Sample Cup, 45ml, Polycarbonate × 10pcs	○	○	○
AX-SV-34	Small Sample Cup, 10 ml, with Cover, Polycarbonate × 10pcs	○	○	○
AX-SV-35	Sample Cup, 13ml, Glass × 1pc	○	○	○
AX-SV-36	Positioning Stopper × 1pc	○	○	○
AX-SV-37	Water Jacket × 1pc, Small Sample Cup with Cover × 4pcs	○	○	○
AX-SV-38	Storage Container, 60ml, Glass × 10pcs	○	○	○
AX-SV-39	Storage Container, 120ml, Plastic × 20pcs	○	○	○
AX-SV-42	Analog Voltage Output (0 ~ 1V)	○	○	○
AX-SV-43	Extension Cable (5m) to connect the main unit and the display unit	○	○	○
AX-SV-51	Stand Set with X-Y-Z Stage	○	○	○
AX-SV-52	X-Y-Z Stage × 1pc	○	○	○
AX-SV-53-EX	Software Set (WinCT-Viscosity × 1pc, 25P-9P RS-232C Cable × 1pc, Serial-USB Converter × 1pc)	○	○	○
AX-SV-54	Cup Set for SV-10A/100A	○	○	○
AX-SV-55	Cup Set for SV-1A	○		
AX-SV-56-1	2ml Sample Cup Holder, Polycarbonate, Transparent × 5pcs	○		
AX-SV-56-2	2ml Sample Cup Holder, Polycarbonate, Black × 5pcs	○		
AX-SV-57	2ml Sample Cup Stand × 2pcs	○		
AX-SV-58	Sample Cup, 2ml with Lid, Polycarbonate × 100pcs	○		
AX-SV-59	Sample Cup, 2ml, Glass × 5pcs, 2ml Sample Cup Stand × 1pc	○		
AX-USB-25P-EX	Serial-USB Converter	○	○	○
AD-8121B	Compact Printer	○	○	○
AD-1682	Rechargeable Battery	○	○	○
AD-1685	Anti-Vibration Table	○	○	○
AX-SV-31-2.5	Standard Liquid for Calibration JS2.5 (500ml)	○	○	
AX-SV-31-5	Standard Liquid for Calibration JS5 (500ml)	○	○	
AX-SV-31-10	Standard Liquid for Calibration JS10 (500ml)	○	○	
AX-SV-31-20	Standard Liquid for Calibration JS20 (500ml)	○	○	
AX-SV-31-50	Standard Liquid for Calibration JS50 (500ml)	○	○	
AX-SV-31-100	Standard Liquid for Calibration JS100 (500ml)	○	○	
AX-SV-31-200	Standard Liquid for Calibration JS200 (500ml)		○	
AX-SV-31-500	Standard Liquid for Calibration JS500 (500ml)		○	
AX-SV-31-1000	Standard Liquid for Calibration JS1000 (500ml)		○	
AX-SV-31-2000	Standard Liquid for Calibration JS2000 (500ml)			△
AX-SV-31-14000	Standard Liquid for Calibration JS14000 (500ml)			○
AX-SV-31-160000	Standard Liquid for Calibration JS160000 (500ml)			○

△ Temperature should be kept at or below 25°C when performing calibrations with the SV-100A.



X-Y-Z Stage



2ml Sample Cup Holder (Transparent)



2ml Sample Cup Holder (Black)