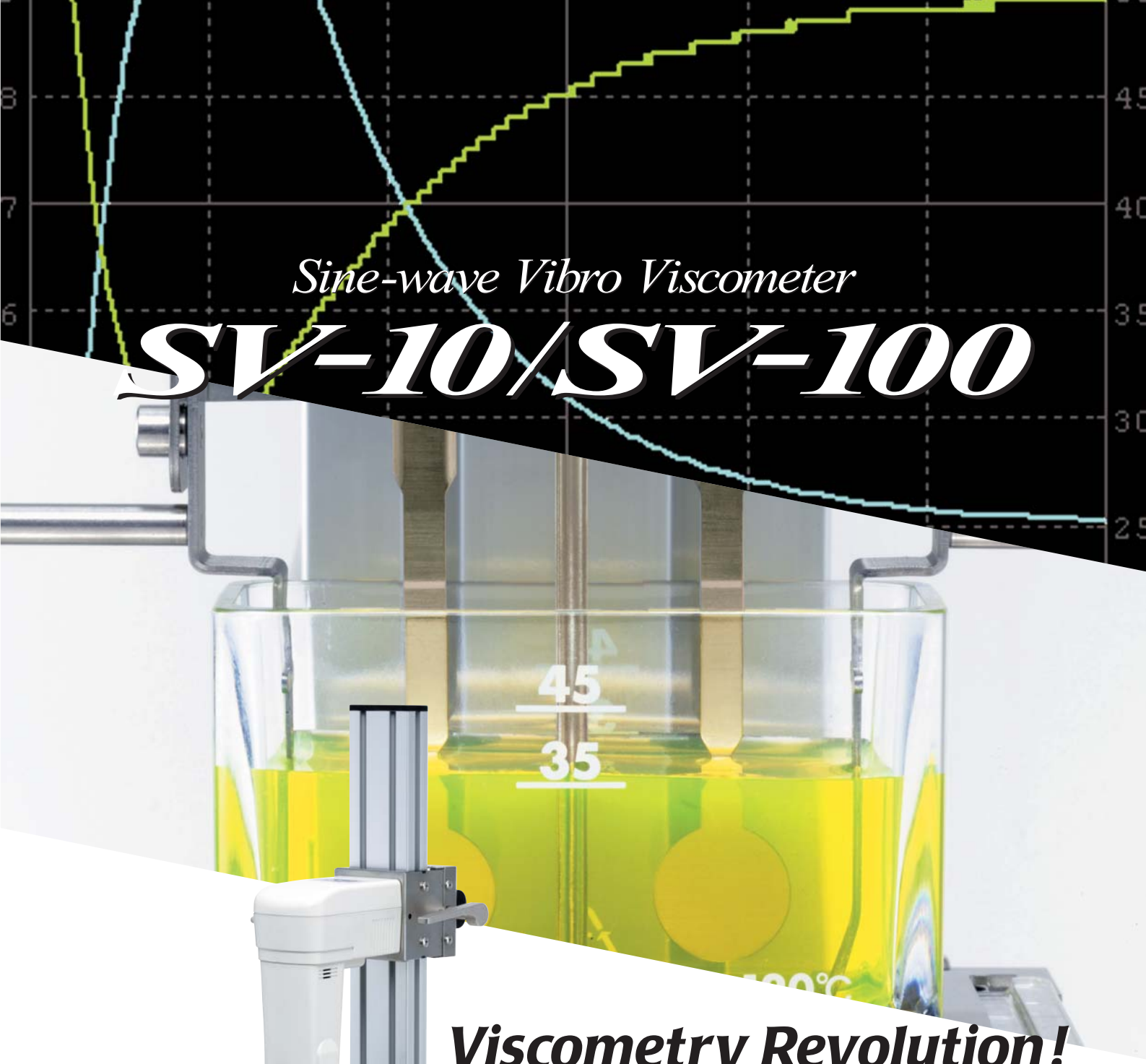
Sine-wave Vibro Viscometer

SV-10/SV-100



Viscometry Revolution!

ISO 9000 CERTIFIED

A&D ...Clearly a Better Value

A&D Company, Limited

Sine-wave Vibro Viscometer

Viscometry Revolution!

Newly developed Tuning-fork Vibration method* promises you high accuracy and a wide measurement range without replacing the sensor plates!! (*Patent pending)

Sine-wave Vibro Viscometer SV series measures viscosity by detecting the driving electric current necessary to resonate the two sensor plates at a constant frequency of 30Hz and amplitude of less than 1mm.

Selectable Wide Measurement Range

Samples with very low viscosity to very high viscosity can be measured without changing the sensor plates, so a wide range of measurements can be made continuously.
(SV-10: 0.3mPa·s - 10,000mPa·s / SV-100: 1,000mPa·s - 100,000mPa·s)

High Measurement Accuracy

The sine-wave Vibro Viscometer SV series, incorporating the innovative Tuning-fork Vibration Method, provides an excellent repeatability of 1% of reading for viscosity measurement.

Temperature Measurement

It is very important to measure the temperature of the fluid correctly because the viscosity is very much dependent upon the temperature of the fluid. The SV series can detect accurate temperature immediately because the fluid sample and the detection unit (sensor plates) with small surface area/thermal capacity reach thermal equilibrium in only a few seconds.

Real-time Measurement

The SV series sensor plate is very thin and small, both in area and in mass, which means that the sample is not adversely affected by temperature change. As a result, a stable viscosity measurement can be monitored in real-time.

Continuous Measurement

The SV series Tuning-fork Vibration Method does not disturb the sample fluid and allows measurement of cloud point of samples such as surface active agents and of surface/interface changes such as wettability due to its ability to measure a wide range without the need to replace the sensor plates.

Viscosity Calibration

Using a Viscosity Standard, viscosity calibration can be easily done. 1 point calibration or 2 point calibration is selectable in the calibration mode.

Data Collection and Graphing Software

WinCT-Viscosity (RsVisco) software transmits viscosity and temperature measurement data to a PC and displays it on a graph in real-time.

Small Sample Size

The standard sample cup requires just over 35ml of sample fluid so there is very little waste. (Optional 10ml/13ml sample cups are also available.)

Easy Cleaning

Due to their simple structure, the SUS 304 stainless steel sensor plates and temperature sensor (all gold-plated) and SUS 304 stainless steel protector can be quickly and easily cleaned.

Non-Newtonian Sample Viscosity Measurement

Thin sensor plates allow little disturbance of sample texture and thus enable measurement of stable viscosity values.

Flowing Sample Measurement

Even the viscosity of flowing samples can be measured, including liquid in turbulent flow, enabling field data measurement, which is as reliable as measurements in a laboratory.

Foaming Sample Measurement

A low drive frequency of 30Hz allows measurement of foaming samples without breaking minute foams and with less influence scattering larger foams.

Sol and Gel Measurement

Sol and Gel sample fluid like starch can be measured during the change of material characteristic.

Vacuum Fluorescent Display

You can avoid unnecessary reading errors with an easy-to-read, large, clear display: 13mm height for viscosity measurement and 11mm height for temperature measurement.

Separated Type Model

The SV-10 series is composed of a Display Unit and a Main Unit offering excellent placement flexibility.

Standard RS-232C Interface

The RS-232C comes as standard for your PC or Printer connectivity and the connection cable (25 pin – 9 pin) is also standard for your convenience.

JCSS (Japan Calibration Service System)

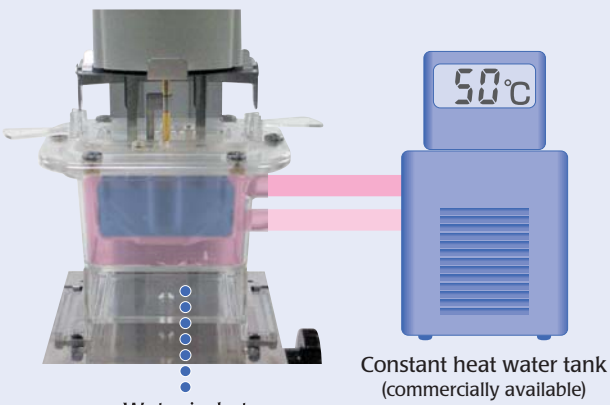
The SV series measurement method has been recognized in Japan by JCSS as an official viscosity measurement instrument, which meets JIS Q 17025 (2005) requirements (equivalent to ISO/IEC17025: 2005). The SV series measurement method also complies with the Guide to the expression of uncertainty in measurement (GUM) and ISO/TR 3666 (1998) – Viscosity of water.

Sample Temperature Control

Our water jacket (AX-SV-37) (optional) used in conjunction with a commercially available constant heat water tank to heat the circulating system, ensures that the sample remains at a constant temperature and that the temperature can be changed for viscosity measurement.
(A small sample cup AX-SV-34 and a glass sample cup AX-SV-35 are available, as optional accessories.)

AX-SV-37 Application of temperature control of sample fluid
Water jacket (body: polycarbonate, packing: silicon gum)
- Small sample cup & lid (4 of each provided)
- Can be used with the small sample cup provided, or with a glass sample cup (AX-SV-35)
- Specifications Application temperature range : 0℃ – 100℃
  Outer dimension of nozzle for circulation : 10.5mm diameter
  Recommended hose : silicon tube, inner measurement 8mm diameter
- Additionally, a commercially available constant heat water tank is necessary
- A stirrer can be set at the base of the water jacket, and can stir up to a viscosity of 1,000mPa·s. (SV-10 only)

Stirrer: VARIOMAG MICRO made by H+P Labortechnik (Germany)
Please use a rotator with dimensions 6mm (length) x 4mm (diameter).



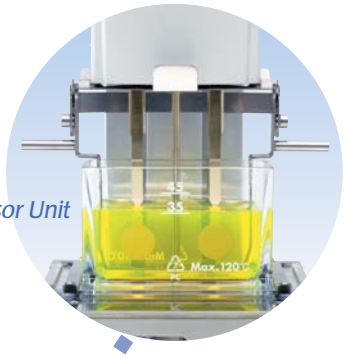
Water jacket

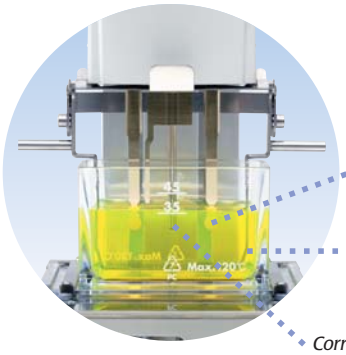
Constant heat water tank
(commercially available)

SV-10/SV-100

SV-10
0.3mPa·s–10Pa·s*
(0.3–10,000mPa·s)

SV-100
1–100Pa·s
(1,000–100,000mPa·s)





Sensor Unit

Corrosive-resistant gold-plated sensor plate

Only 35ml of sample needed

Corrosive-resistant gold-plated temperature sensor

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

Wide range
SV-10 0.3mPa·s–10Pa·s
SV100 1–100Pa·s

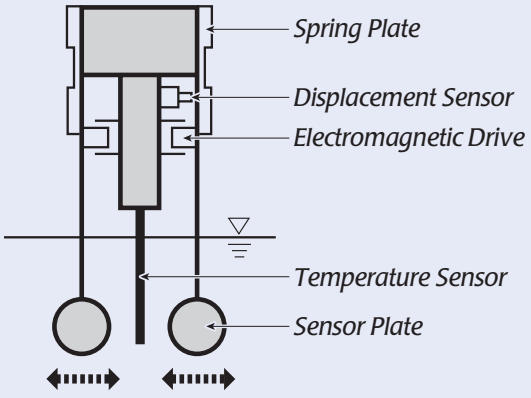
Measurement begins approx. 15 secs after pressing the [START] key

Separated Display Unit
Main Unit and Display Unit for a variety of applications

Measurement Principle for SV Series

The SV series has 2 thin sensor plates that are driven with electromagnetic force at the same frequency by vibrating at constant sine-wave vibration in reverse phase like a tuning-fork.

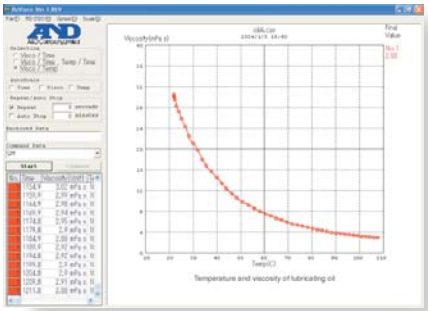
The electromagnetic drive controls the vibration of the sensor plates to maintain constant amplitude. The driving electric current, which is an exciting force, will be detected as the magnitude of viscidity produced between the sensor plates and the sample fluid. The coefficient of viscosity is obtained by the correlation between the driving electric current and the magnitude of viscidity.



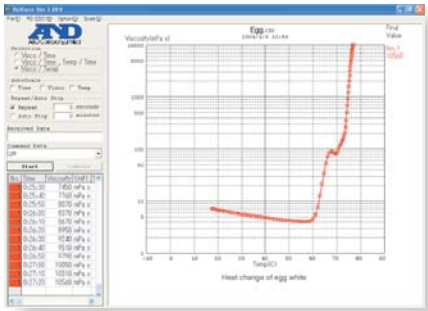
*1,000mPa·s - 10,000mPa·s can be written also as 1Pa·s - 10Pa·s

WinCT-Viscosity

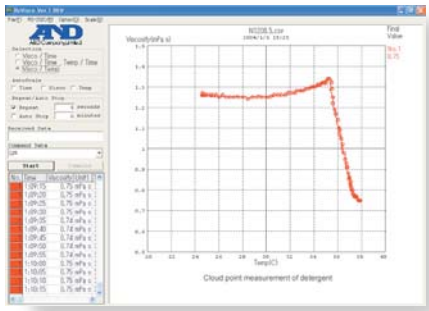
RsVisco software was developed for the transmission of real-time viscosity and temperature measurement results from the SV series to a PC. The results are displayed in a graph format with scaling conversion and logarithm display functions available. The user can save the measurement data as a "CSV" file and open it using RsVisco for future analysis of a sample.



Temperature and viscosity of lubricating oil



Heat change of egg white or Log display



Cloud point measurement of detergent

Specifications

	SV-10	SV-100
Measurement Method	Sine-wave Vibro Viscometer using Tuning Fork Vibration Method	
Vibration Frequency	30Hz	
Viscosity Measurement Unit	mPa·s , Pa·s , cP , P	Pa·s , P
Viscosity Measurement Range	0.3mPa·s – 10Pa·s (0.3 – 10,000mPa·s)	1 – 100Pa·s (1,000 – 100,000mPa·s)
Accuracy	1% of Repeatability (S.D. , 20 – 30℃ , No condensation)	
Operating Temperature	10 – 40℃ (50 – 104℉)	
Minimum Sample Amount	Standard Sample Cup (35ml-45ml), Optional Small Sample Cup (10ml), Optional Glass Sample Cup (13ml)	
Temperature Measurement	0 – 160℃ /0.1℃ (32 – 320 ℉/0.1 ℉)	
Display	Vacuum Fluorescent Display (VFD)	
Interface	RS-232C	
Power Supply	AC Adaptor	
Power Consumption	Approx. 14VA	
Physical Dimensions	Main Unit : 332 (W) x 314 (D) x 536 (H) mm / Approx. 5.0 kg Display Unit : 238 (W) x 132 (D) x 170 (H) mm / Approx. 1.3 kg	
Connection Cable Length	1.5m (Between the Main Unit and the Display Unit)	
Standard Accessories	Manual , AC Adaptor , CD-ROM (WinCT-Viscosity) Sample Cups , RS-232C Cable (25 pins – 9 pins)	

Accessories

Small sample cup (10ml)
Used when measuring small volume samples

Glass sample cup (approx. 13ml)
Used when measuring solvents, etc.

Water jacket
Used to keep the temperature of the sample constant, or to change the temperature. A constant temperature water tank is also necessary.

Positioning stopper
Used to set the sensor unit and sensor plates to a uniform height when making repeated measurements.

AX-SV-33	Sample cup (PC [polycarbonate], volume 35ml – 45ml) Same as container that comes as standard with the SV unit. Set of 10 pcs
AX-SV-34	Small sample cup (PC [polycarbonate], volume 10 ml) Set of 10 pcs Set of 10 lids included
AX-SV-35	Glass sample cup (volume approx. 13ml)
AX-SV-36	Positioning stopper
AX-SV-37	Water jacket (body: polycarbonate, packing: silicon gum), with 4 sets of small sample cup and lids
AX-SV-38	Glass sample cup (volume approx. 60ml) Set of 10 pcs
AX-SV-42	Analogue voltage output (0 – 1V)
AX-SV-43	Extension cable (5m) to connect measuring unit to display unit
AD-8121B	Compact printer