Agence Nord:
ZA Object'Ifs Sud - Lot A3
6 Allée Emilie du Châtelet
14123 Ifs
tél : 02.31.34.50.74
fax : 02.31.34.55.17

Agence Est:
Parc Club des Tanneries
2 Rue de la Faisanderie
67380 Lingolsheim
tél : 03.88.04.01.81
fax : 03.68.93.01.52

Agence Sud:
Bât Le Venango. 392 Rue Jean Dausset
AGROPARC - BP11575
84916 Avignon Cédex 9
tél : 04.90.27.17.95 fax : 04.90.27.17.52

DELTA LABO

www.deltalabo.fr
info@deltalabo.fr

Tuning Fork Vibro Viscometer

SV-10/SV-100

Viscometry Revolution!

ISO 9000 CERTIFIED

A&D ...Clearly a Better Value

A&D Company, Limited

http://www.aandd.jp

Tuning Fork Vibro Viscometer SV-10/SV-100

Viscometry Revolution!

A&D's original, tuning fork vibro method* promises you high accuracy and a wide measurement range without replacing the sensor plates!! (* Patent approved)

Tuning Fork 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 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 SV series, incorporating the innovative tuning fork vibro method, provides an excellent repeatability of 1% of the measured value (by standard deviation) 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 (-2% to -10%/°C). The SV series can detect accurate temperature immediately with a temperature sensor (0 to 160°C range) located right next to the viscosity sensor plates.

Highly Stable Measurement

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.

Continuous Measurement

The SV series allows measurement of the cloud points 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.

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-10.

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 series is composed of a Display Unit and a Main Unit offering excellent placement flexibility.

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.

Accreditation

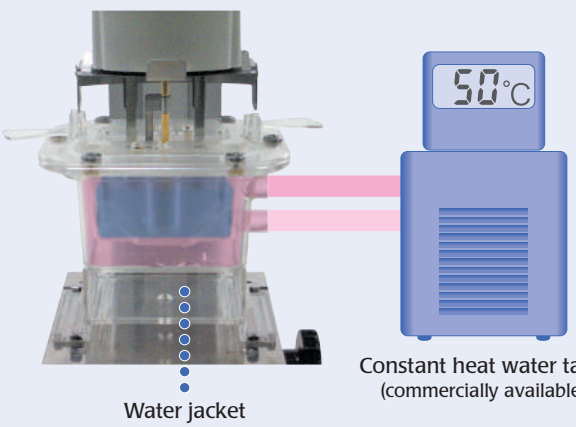
The tuning fork vibro method is recognized as a Japan industrial standard for viscosity measurement of liquids (JIS Z8803). The viscometer of this method is also accredited as a standard device for the Japan Calibration Service System (JCSS) along with capillary and rotational viscometers.

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°C –100°C
  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)

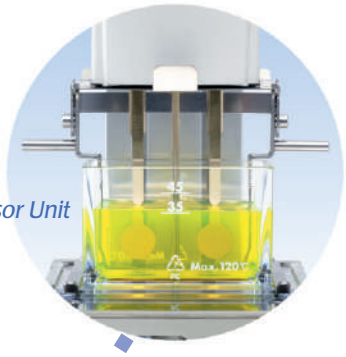
VFD Display

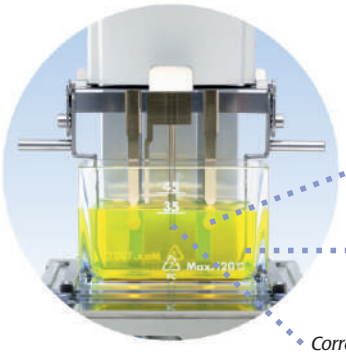
RS-232C Interface

Software

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

SV-100
1–100Pa·s
(1,000–100,000mPa·s)



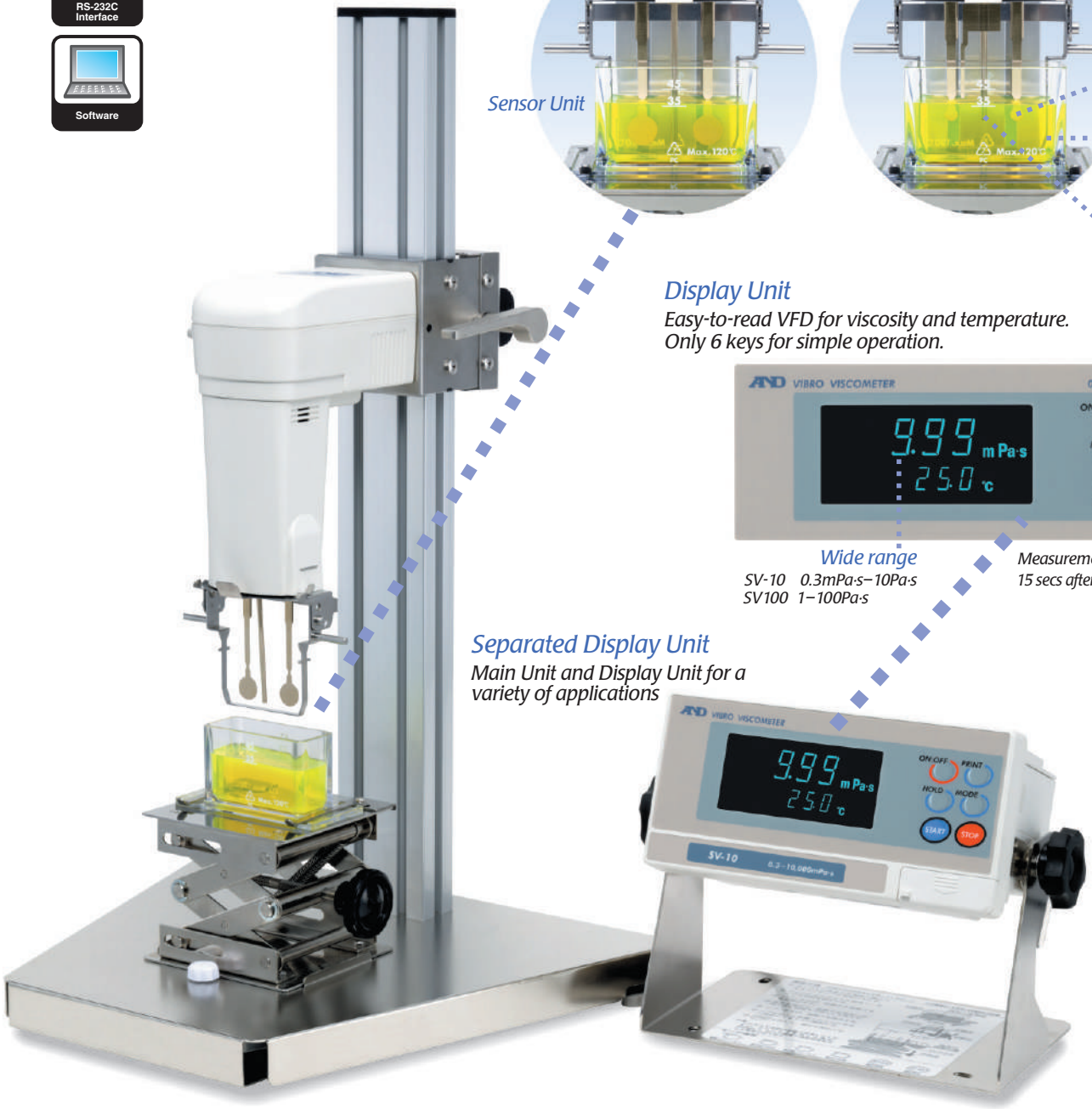


Sensor Unit

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

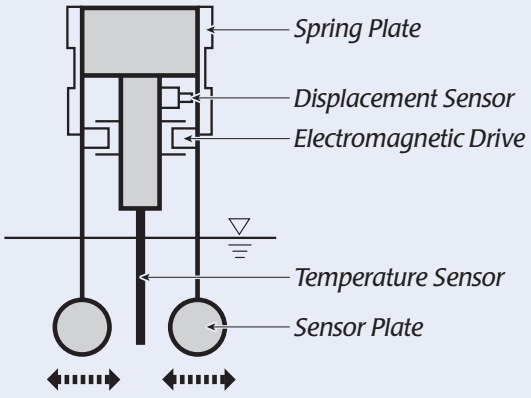
Measurement begins approx. 15 secs after pressing the [START] key

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

How the Tuning Fork Vibro Viscometer Works

Two thin sensor plates in a tuning fork arrangement are driven with electromagnetic force to vibrate at their natural (resonant) frequency of 30 Hz within the sample fluid. Viscosity is then calculated based on the proportional relationship between the viscous resistance of the sample fluid and the amount of electric current required to drive and maintain the sensor plates at a constant vibration amplitude.

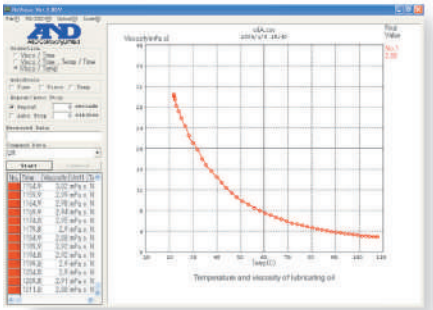
(The value measured by the tuning fork vibro viscometer is the product of viscosity and density. It is displayed in the [mPa•s] unit of measurement, assuming that the density of the sample fluid is 1 g/cm³.)



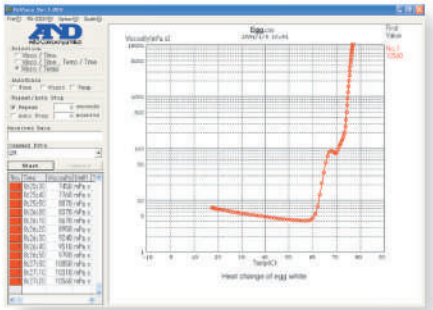
*1,000mPa·s - 10,000mPa·s can be written also as 1Pa·s - 10Pa·s

WinCT-Viscosity

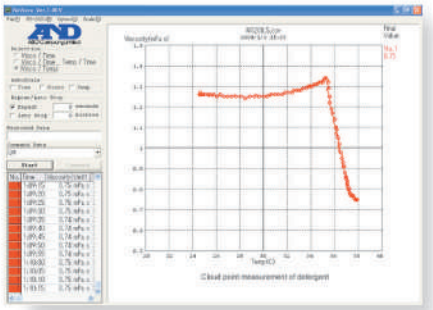
RsVisco software was developed for the transmission of real-time viscosity and temperature measurement results from the SV series to a PC. The results are displayed in a graph format with scaling conversion and logarithm display functions available. The user can save the measurement data as a "CSV" file 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	Tuning Fork Vibro Method	
Vibration Frequency	30Hz (Natural Frequency)	
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°C , No condensation)	
Operating Temperature	10 – 40°C (50 – 104°F)	
Minimum Sample Amount	Standard Sample Cup (35ml-45ml), Optional Small Sample Cup (10ml), Optional Glass Sample Cup (13ml)	
Temperature Measurement	0 – 160°C /0.1°C (32 – 320°F/0.1°F)	
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-8127	Compact printer

...Clearly a Better Value

A&D Company, Limited
3-23-14 Higashi-Ikebukuro, Toshima-ku,Tokyo 170-0013 JAPAN
Telephone:[81](3) 5391-6132 Fax:[81](3) 5391-1566
http://www.aandd.jp

A&D ENGINEERING, INC.
1756 Automation Parkway, San Jose, CA 95131 U.S.A.
Telephone:[1](408) 263-5333 Fax:[1](408) 263-0119

A&D Australasia Pty Ltd.
32 Dew Street, Thebarton, South Australia 5031 AUSTRALIA
Telephone:[61](8) 8301-8100 Fax:[61](8) 8352-7409

A&D INSTRUMENTS LTD.
Unit 24/26 Blacklands Way Abingdon Business Park,
Abingdon, Oxon OX14 1DY UNITED KINGDOM
Telephone:[44](1235) 550420 Fax:[44](1235) 550485

<German Sales Office>
Hamburger Straße 30 D-22926 Ahrensburg GERMANY
Telephone:[49](0) 4102 459230 Fax:[49](0) 4102 459231

A&D KOREA Limited
817, Manhattan Bldg., 33, Gukjegeumyung-ro 6-gil,
Yeongdeungpo-gu, Seoul, 07331, KOREA
Telephone:[82](2) 780-4101 Fax:[82](2) 782-4280

A&D RUS CO., LTD.
Vereyskaya str.17, Moscow, 121357 RUSSIA
Telephone: [7] (495) 937-33-44 Fax: [7] (495) 937-55-66

A&D Instruments India Private Limited
509 Udyog Vihar Phase V
Gurgaon-122 016, Haryana, INDIA
Telephone: [91](124) 471-5555 Fax: [91](124) 471-5599

*SV-ADCC-10-PR7-188005GP