

**VT-03E/04E, Viscolesters**

VT-04E

This product is designed for a wide range of viscosity measurements. It is suitable for checking industrial substances such as heavy oil, paint, and adhesives. It can be used for quality control in manufacturing processes of foodstuffs and other products. When inspecting construction vehicles and other machinery, the unit can serve to measure not only the viscosity of hydraulic oil but also of tight spindle oil, gear oil, etc. The unit employs the rotating cylinder principle. A rotor turning at constant speed is inserted into the liquid to be measured. The resistance to rotor movement caused by the viscosity (torque) is measured using a special mechanism to obtain direct readings in millipascal-seconds (mPa.s) or decipascal-seconds (dPa.s).

- Compact size, can be operated with one hand.
- Battery powered design allows use anywhere.
- Quick startup shows readings immediately after turn-on.
- Direct readings in millipascal-seconds or decipascal-seconds (SI-units).
- Stand and AC adapter available as options.

**VT-03E, Specification**

Measurement range:

No.4 rotor: 2 – 33 mPa•s

No.5 rotor: 15 – 150 mPa•s

No.3 rotor: 50 – 300 mPa•s

Measurement accuracy: Within  $\pm 5\%$  of scale maximum (using supplied cup A or cup B)

Scale calibrated according to JIS Z 8809 viscosity calibration standard

Rotor speed: 62.5 rpm

Power requirements: 6 V DC (four IEC A6P batteries) Of AC adapter VA-05

Current consumption at maximum torque approx. 100 mA

Dimensions: 98 (W) X 181 (D) X 40 (H) mm (without protruding parts)

Weight: Approx. 570 g (without batteries).

**Composition:**

Model	VT-03E	VT-04E
	VT-03 Unit	VT-04 Unit
<b>Rotor</b>	No.3, No.4, No.5	No.1, No.2, No.3
<b>Cup</b>	A, B	No.3 Cup
<b>Extension Rod</b>	-	1 PC
<b>Batteries</b>	4pcs, IEC R6	4pcs, IEC R6

1 **Optional accessory:** Stand VA-04. AC adapter VA-05

**VT-04E, Specifications**

Measurement range: No.3 rotor: 0.3 – 13 dPa's (IV-h No.3 cup)

No.1 rotor: 3 – 150 dPa's (with JIS 300 mL beaker)

No.2 rotor: 100 – 4000 dPa's (with JIS 300 mL beaker)

Measurement accuracy and reproducibility

Measurement accuracy  $\pm 1\%$  of Indicated value

Reproducibility  $\pm 5\%$  (calibrated with silicon oil)

Rotor speed: 62.5 rpm

Power requirements: 6V DC (four IEC A6P batteries) or AC adapter VA-05

Current consumption at maximum torque approx. 300 mA

Dimensions: 98 (W) X 181 (D) X 40 (H) mm (without protruding parts)

Weight Approx. 570g (without batteries)

**Supplied accessories for VT-03E**

No.3 rotor (dia. 45x47x160mm) SUS304 1

No.4 rotor (dia. 78x46x159mm) AlO50 (alumite) 1

No.5 rotor (dia. 61.2x36x149mm) AlO50 (alumite) 1

Cup A (dia. 92x76mm) AlO50 (alumite) 1

Cup B (dia. 92x76mm) AlO50 (alumite) 1

(Cup B has 30mm diameter hole at the bottom.) IEC R6P (size AA) battery 4

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**Supplied accessories for VT-04E**

No.1 rotor (dia. 24x53x166mm) SUS304 1

No.2 rotor (dia. 15x1x113mm) SUS304 1

No.3 rotor (dia. 45x47x160mm) SUS304 1

No.3 Cup (dia. 52.6x75mm) SUS304 1

Extension Rotor (900mm • 300x3) SUS304 1

IEC A6P (Size AA) battery 4

Instruction manual 1

**Sample Amount for Measurement**

	VT-03E	VT-04E
<b>Cup A</b>	approx. 500mL	-
<b>No.3 Cup</b>	-	approx. 170mL
<b>Commercially available 300mL beaker</b>	-	approx. 350mL

**Optional accessory:** Stand VA-04. AC adapter VA-05

**VT-05/06, Uni-Cylinder Rotational Viscometers**



The VT-05/06 is designed for quality control applications in the manufacturing process of industrial products such as petrochemicals, paint, and adhesives, as well as foodstuffs. Viscosity measurements covering a wide range are possible, such as gear oil used in construction machinery. Measurement is performed by simply submerging a rotor in the fluid. The resistance to rotor movement caused by the viscosity (torque) is measured to obtain direct readings.

- Compact and light weight make the unit easily portable and allow operation with one hand.
- Can be powered by alkaline batteries, nickel-Hydride rechargeable batteries, or AC adapter.
- Direct indication of viscosity in millipascal-seconds or decipascal-seconds (SI units).
- Dedicated stand for measurement available as option.

**Usage**

1. Attach rotor to unit and hold unit in the hand or place on dedicated stand. (Unit should be approximately horizontal in either case.)
2. Insert rotor in sample fluid, turn power on, and select rotor number.
3. Press start button and read indicated viscosity.

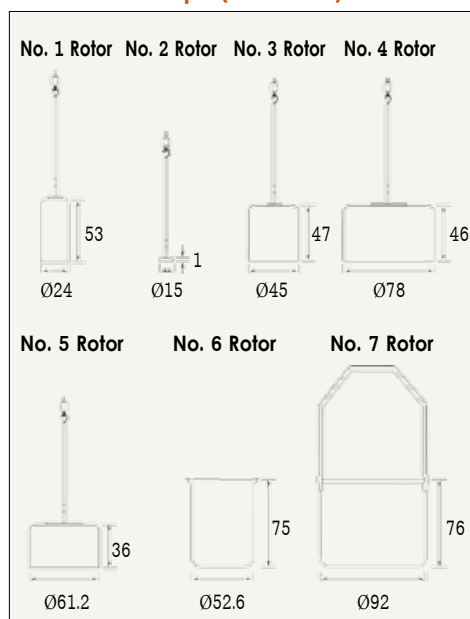
\* VT-06 allows use of No. 1 rotor, No. 2 rotor, and supplied extension rod to reach fluid at a greater distance.

**Specifications**

Model	VT-05 (Low viscosity)	VT-06 (High viscosity)
<b>Measurement range</b>	No. 4 rotor: 2 to 33 mPa•s No. 5 rotor: 15 to 150 mPa•s No. 3 rotor: 50 to 300 mPa•s	No. 3 rotor: 0.3 to 13 dPa•s (with No. 3 cup) No. 1 rotor: 3 to 150 dPa•s (with JIS 300 mL beaker*1) No. 2 rotor: 100 to 4000 dPa•s (with JIS 300mL beaker*1)
<b>Sample fluid capacity</b>	Approx. 460 mL (with Cup A or Cup B)	No. 1 & 2 rotor (with JIS 300mL beaker*1) approx. 300mL. No. 3 rotor (with No. 3 cup) approx. 170 mL Clearance between rotor end and cup bottom: about 15 mm
<b>Measurement accuracy</b>	Within 0 of max. measurement range for each rotor	±10% of indicated value reproducibility ±5
<b>Rotor speed</b>	62.5 rpm	
<b>Power supply</b>	IEC LR6 (size AA) alkaline batteries nickel Hydride rechargeable batteries, AC adapter VA-05J	
<b>Dimensions and Weight</b>	175 (H) x 77(W) x 40(D) mm (without protruding parts) Approx. 260g (without batteries)	
<b>Supplied accessories</b>	No. 3 rotor (dia. 45x47x160mm) SUS304 1 No. 4 rotor (dia. 78x46x159mm) A1050 (alumite) 1 No. 5 rotor (dia. 61.2x36x149mm) A1050 (alumite) 1 Cup A (dia 92x76 mm without hole) A1050 (alumite) 1 Cup B (dia. 92x76 mm, with hole) A1050 (alumite) 1 IEC LR6 (size AA) alkaline batteries 4	No. 1 rotor (dia. 24x53x166mm) SUS304 1 No. 2 rotor (dia 15x1x113mm) SUS304 1 No. 3 rotor (dia. 45x47x160mm) SUS304 1 No. 3 Cup (dia 52x75 mm) SUS304 1 Extension rod (900mm•300x3) SUS304 1 IEC LR6 (size AA) alkaline batteries

\*1 JIS R 3503:1994, Ø78x103 (H)

**Rotors and Cups (unit: mm)**



**Viscotester measurement examples (for reference)**

Product type	Viscosity	Viscotester	Rotor
<b>Newtonian fluids</b>			
Milk	2.6 mPa•s	VT-05	No.4
Soy sauce	5 mPa•s	VT-05	No.4
<b>Lactic fermented beverage</b>			
Olive oil	28 mPa•s	VT-05	No.5
Castor oil	71 mPa•s	VT-05	No.5
Starch syrup	6 dPa•s	VT-06	No.3
	1000 dPa•s	VT-06	No.2
<b>Non-Newtonian fluids</b>			
Tomato juice	230 mPa•s	VT-05	No.3
Condensed milk	16 dPa•s	VT-06	No.1
Chocolate syrup	25 dPa•s	VT-06	No.1
Tomato ketchup	43 dPa•s	VT-06	No.1
Pure honey	76 dPa•s	VT-06	No.1
Toothpaste	320 dPa•s	VT-06	No.2
Starch paste	310 dPa•s	VT-06	No.2

**Options**

Product name	Product number
Stand	VA-04
AC adapter	VA-05J

**CGS Unit and SI Unit**

- P (poise), cP (centi poise).
- Pa•s (pascal-seconds).
- dPa•s (decipascal-seconds).
- mPa•s (millipascal-seconds)
- 1cP = 1/1,000Pa•s = 1mPa•s
- 1P = 1/10Pa•s = 1dPa•s

**Sample amount for measurement**

	VT-05	VT-06
Cup A	approx. 460mL	—
No.3 Cup	—	approx. 170mL
Commercially available 300 mL beaker	—	approx. 350mL



VIS-1

### VIS-1, Viscometer

#### Specification:

VIS-1 Rotational Viscometer is designed for the determination of viscosity and rheological behavior of fluid and semi-fluid. It can also be used to measure the dynamic viscosity and structural viscosity of mineral oil, lubrication oil, adhesives, paints, dyestuff and printing inks, etc.

#### Characteristics:

- Measurement range:  $1-1 \times 10^5$  mPa.s.
- Rotors: No. 1 2 3 4.
- Rotor speed(rpm): 6/12/30/60.
- Accuracy:  $\pm 5\%$  Newtonian Fluid.
- Overall DIM.: 445x235x380mm.
- Net weight: 8 kg.



Rotors	Speed r/min	60	30	12	6
1		100	200	500	1000
2		500	1000	2500	5000
3		2000	4000	10000	20000
4		10000	20000	50000	100000



VIS-2

### VIS-2, Stormer Viscometer

The VIS-2 Digital Stormer viscometer measures fluid viscosity in Krebs Units. A paddle type spindle is driven at 200rpm by a constant speed motor. The reaction torque of the spindle rotating at 200rpm is converted to viscosity in Krebs Units. The digital display of the viscometer shows viscosity in Krebs Units(KU), the associated grams value(gm), and viscosity in centipoise (cP).

#### Application:

Paints, coatings, Adhesives, Inks, Pastes.

#### Features:

- Measure range: 40KU-141KU. 32gm-1099gm. 27cP- 5274cp.
- Accuracy:  $\pm 1\%$  (F.S).
- Reproducibility:  $\pm 0.5\%$  (F.S).
- Speed: 200 RPM ( $\pm 0.01$  RPM).
- Measuring containers: 1 pint. 1/2 pint.
- Input Voltage: 100V-240V, 50Hz/60Hz.
- Net Weight: 7 Kg.

#### Instrument configuration:

- VIS-2 Viscometer.
- Automatic up and down rod and base.
- paddle spindle KU1-10.
- 1/2 pint can adapter. 1 pint can adapter KU 1-74.
- RTD Temperature Probe.

**VIS-8, Digital Basic Rotary Viscometer**

VIS-8

Direct readout of all measurement parameters on an illuminated Liquid Crystal Display • Data on screen: • Speed selected: RPM • Spindle selected: S.P. • Viscosity reading: cP (mPa-s) • Percentage of full scale: % • Sample temperature: °C • Temperature measurement by PT100 probe • Viscosity reading: dynamic viscosity (cP or mPa-s) • The viscometer and the PT100 can be calibrated by the user • Auto range function to determine the maximum viscosity with each spindle/speed combination • It can work with a micro printer • Ultra-sensitive front keyboard that allows easy input of all parameters • "ERROR" message in the screen with sound alarm when the viscosity of the test material exceeds the full scale of the selected combination (SP/rpm.) • Sound alarm if the equipment is working at under 20% of selected full scale • The viscometer is equipped with many pre-sets speeds, from 0.3 to 100 rpm • Safety protection against sudden rises in the power supply • English language options • Direct reading in cP (mPa-s).

<b>Accuracy</b>	± 1% of the full scale
<b>Resolution</b>	Using LVA (Low Viscosity Adapter): 0.01, When viscosity is lower than 10,000 cP:1, When viscosity is equal or higher than 10,000 cP:1
<b>Repeatability</b>	0.5%
<b>Temperature Range</b>	from 0.0°C to + 100.0°C
<b>Resolution</b>	0.1°C
<b>Accuracy</b>	±0.1°C
<b>Type of Probe</b>	PT 100
<b>Outputs</b>	RS232, Micro Printer
<b>Power</b>	All Models are Supplied with 85/265 VAC
<b>Net Weight</b>	4 kg

Model	Measuring Range	Fixed Speeds in R.P.M
VIS-8	10-2,000,000 Cp	0.3,0.6,1.5,3,6,12,30,60

**VIS-S1/S2/S3/AI, Digital Rotary Viscometer, Without Limits**

Direct readout of all measurement parameters on an illuminated Liquid Crystal Display • Data on screen: • Speed selected: r.p.m. • Spindle selected: S.P. • Viscosity reading: cP (mPa-s) • Percentage of full scale: % • Sample temperature: °C • Temperature measurement by PT100 probe • Viscosity reading: dynamic viscosity (cP or mPa-s) • The viscometer and the PT100 can be calibrated by the user • Auto range function to determine the maximum viscosity with each spindle/speed combination • It can work with a micro printer • Ultra-sensitive front keyboard that allows easy input of all parameters • "ERROR" message in the screen with sound alarm when the viscosity of the test material exceeds the full scale • Sound alarm if the equipment is working at under 20% of selected full scale • The viscometer is equipped with many pre-sets speeds, from 0.1 to 100 rpm • Safety protection against sudden rises in the power supply • English language options • Direct reading in cP (mPa-s).



VIS-S3

<b>Accuracy</b>	± 1% of the full scale
<b>Resolution</b>	Using LVA (Low Viscosity Adapter): 0.01, When viscosity is lower than 10,000 cP:1, When viscosity is equal or higher than 10,000 cP:1
<b>Repeatability</b>	0.5%
<b>Temperature Range</b>	from 0.0°C to + 100.0°C
<b>Resolution</b>	0.1°C
<b>Accuracy</b>	±0.1°C
<b>Type of Probe</b>	PT 100
<b>Outputs</b>	Computer interface RS232, Micro Printer
<b>Power</b>	All Models are Supplied with 85/265 VAC
<b>Net Weight</b>	4 kg

Model	Measuring Range	Fixed Speeds in R.P.M
VIS-S1	10-600,000 cP	1-60(nonpolar shift)
VIS-S2	10-6,000,000 cP	0.1-99.9
VIS-S3	10-80,000,000 cP	0.1-99.9
VIS-AI	10-1,000,000 cP	0.1-200.0



#### Professional, Rotational Viscometer



VIS-LDV1P

Direct readout of all measurement parameters on an illuminated Liquid Crystal Display • Data on screen: • Speed selected: r.p.m. • Spindle selected: S.P. • Viscosity reading: cP (mPa-s) • Percentage of full scale: % • Sample temperature: °C • Shear rate (with special spindles): SR • Shear stress (with special spindles): SS • Determination of relative viscosity and absolute viscosity compute yield stress • Different menu options • AUTO TEST of the equipment by scanning at different speeds, with audible and visual warning if it is not operating properly • Temperature measurement by PT100 probe • Viscosity reading: dynamic viscosity (cP or mPa-s) • Datalogger function of the obtained results when an experiment is performed. The equipment is supplied with Windows software which can dump the data obtained to a file in Excel format (.xls) for subsequent processing • Determination of shear rate and shear stress with coaxial spindles • The viscometer and the PT100 can be calibrated by the user • Auto range function to determine the maximum viscosity with each spindle/speed combination • It can work with a micro printer or window software... • Ultra-sensitive front keyboard that allows easy input of all parameters. • "ERROR" message in the screen with sound alarm when the viscosity of the test material exceeds the full scale of the selected combination (SP/r.p.m.) • Sound alarm if the equipment is working at under 10% of selected full scale. • The viscometer is equipped with many speeds, from 0.1 to 800 r.p.m. The user can select another different speed into this margin • Safety protection against sudden rises in the power supply.

Model	Measuring Range	Fixed Speeds in R.P.M
VIS-LDV1P	2-2M cP	0.3-100
VIS-RDV1P	100-13M cP	0.3-100
VIS-HADV1P	200-26M cP	0.3-100
VIS-HBDV1P	200-104M cP	0.3-100
VIS-LDV2P	1-6M cP	0.1-200.0
VIS-RDV2P	100-40M cP	0.1-200.0
VIS-HADV2P	200-80M cP	0.1-200.0
VIS-HBDV2P	800-320M cP	0.1-200.0
VIS-LDV3P	1-6M cP	0.1-250.0
VIS-RDV3P	50-40M cP	0.1-250.0
VIS-HADV3P	100-80M cP	0.1-250.0
VIS-HBDV3P	400-320M cP	0.1-250.0

M=1,000,000 cP

#### VIS-79 Series, Double Cylinder Digital High Speed Viscometer



VIS-79

#### Feature:

Dv Gather Software is for optional • RTD Temperature Probe • Stepping Motor means Accurate, reliable operation • Direct readout of all measurement parameters • Auto Range Showing • Time Function for measurement • Sound alarm at under 20% Torque • Linear calibration • Wide range power supply: 100V-240V.

#### Applications:







Starch Inks Latex Adhesives (Solvent base) • Polymer Solutions Oils Paints and Coatings Solvents • Cosmetics Dairy Products Pharmaceuticals Juices, etc.

#### Optional Accessories:

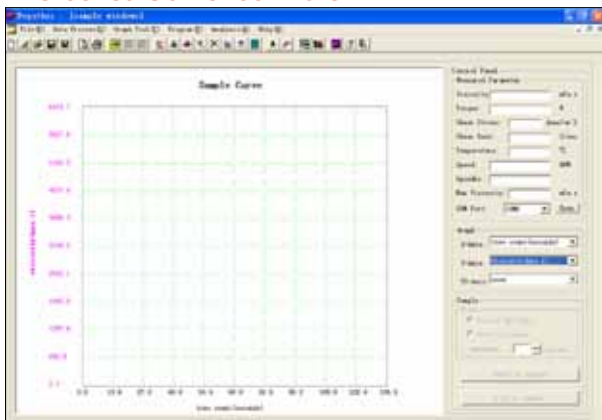
Dv Gather Software • Circulating Water Bath • Standard Oils • Micro Printer.

Model	VIS-79	VIS-79A	VIS-79B	VIS-79P
Range(mPa.s)	1-1M	1-1.5M	1-7.5M	1-75M
RPM	7.5, 75, 750	5-750 Step 10RPM	1-800 Step 10RPM	1-800
Temperature	0-120°C			
Spindles	E, F, G, The three spindles are with B container for high viscosity A, B, C, D, the four spindles are with A container for low viscosity			
Accuracy	±1.0% of Range			
Repeatability	±0.5%			

VIS Accessories

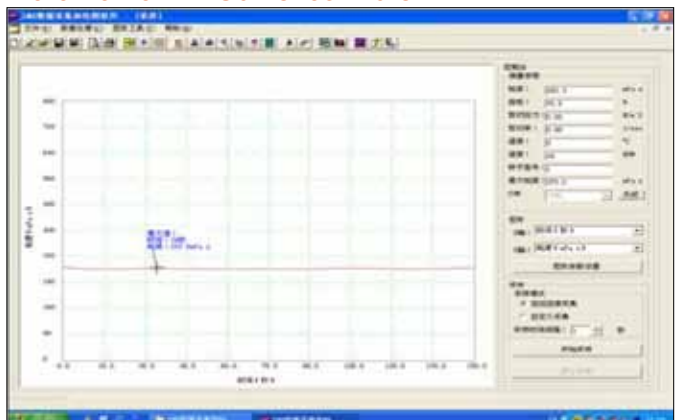
Micro Printer	Low Viscosity Adapter	RTD Temperature Prob
		
<p>Time to print measure information, including temperature, rotation speed, spindle, torque, viscosity.</p>	<p>Super low viscosity adapter (0#spindle). Measure range: 1cp–20cp. Small sample size: 30ml. Material: 314 or 316</p>	<p>RTD Temperature probe. Temperature display range: 0°C–100°C</p>
Small Sample Adapter	Thermosel	Circulating Water Bath (Model: DC-0506)
		
<p>Small sample adapter. Sample volume only from 5ml to 20ml. SC21 – 5–50,000CP SC27 – 25–250,000CP SC28 – 50–500,000CP SC29 – 100–1,000,000CP Not for VIS-1, VIS-8.</p>	<p>Thermosel for elevated temperature testing. The temperature can be used from environment temperature +10°C to 250°C. SC21, SC27, SC28, SC29, four spindles is configured.</p>	<p><b>Specifications:</b> Temperature range: -5°C~+95°C Temperature stability: ±0.1°C Heater wattage: 300W Flow rate: 4L/min Compressor size: 100W Interior size(mm): 250W x 200D x 150H Bath opening(mm): 180W x 140D Applicable ambient: 5°C~35°C Power: AC220V±10%, 50Hz</p>

PRO Series Gather Software



PRO Series viscometer can select PRO gather software to gather data, save data, compare many history curves and download custom program to viscometer, analysis curve to compute Yield stress, plastic viscosity etc.  
Powerful scripting language provides for simple to complex data collection programs.  
Provides looping functions for repetitive tests.  
Automatic calculation of yield stress (bingham plastic, casson, power law, consistency index)

VIS-S1/S2/S3/AI Gather Software



Viscometer can select Gather software to automate collect data, save data, compare many history curve. Data can be saved as a file or exported to excel format.