Вискозиметры автоматические CANNON

Техническое описание

CAV®-2100 Single-Bath Kinematic Viscometer

CAV®-2100 is a fully automated, single-bath laboratory viscometer with a 13-position sample handler for unattended D445 processing. Each of the two Atlantic-style tubes covers a 100-fold viscosity range between 0.5 mm²/s (cSt) and 10,000 mm²/s (cSt) from 20 °C to 150 °C (with available options).

Common Applications

- Formulated oil analysis
- Hydraulic oil analysis
- Additive analysis
- Marine fuel testing
- Base stock analysis
- Light and heavy fuel testing
- Waxes/paraffin
- Crude oil testing
- Glycols

miniAV®-HT High Temperature Kinematic Viscometer

miniAV®-HT is a fully automated, single-sample, benchtop viscometer for determining the kinematic viscosity of asphalts at 60 °C and 135 °C. The Ubbelohde-style tube covers a 100-fold viscosity range at values between 0.5 mm²/s (cSt) and 10,000 mm²/s (cSt).

Common Applications

- Asphalt binders
- Asphalt cements
- Asphalt cutbacks

Dimensions (W × D × H)	**Unit:** 25.4 cm × 30.5 cm × 59.8 cm (10.0 in × 12.0 in × 23.5 in) **Power Supply:** 33.0 cm × 39.6 cm × 17.2 cm (13.0 in × 15.6 in × 6.8 in) **Waste Receiver:** 33.0 cm × 39.6 cm × 17.2 cm (13.0 in × 15.6 in × 6.8 in)
Weight	**Unit:** 12.5 kg (27.5 lb) **Power Supply:** 11.0 kg (24.0 lb) **Waste Receiver:** 6.0 kg (13.0 lb)
Shipping dimensions (W × D × H)	74.0 cm × 64.0 cm × 92.0 cm (29.0 in × 25.0 in × 36.0 in)
Shipping weight (with all items)	64.0 kg (140.0 lb)
Maximum thoughput	12 tests per hour
Automated sample capacity	1
Viscosity range	0.5 mm^2/s (cSt) to 10,000 mm^2/s (cSt) in 100-fold increments (depending on viscometer tube selection).
Timing resolution	0.01 s (timing accuracy to ± 0.001 s)
Temperature range and accuracy	40 °C to 100 °C, ± 0.01 °C 100 °C to 150 °C, ± 0.02 °C * Alternate bath medium may be required for temperatures below 60 °C or above 135 °C
Minimum sample/solvent volume	5 mL sample/15 mL solvent per test (as little as 3 mL with fast run tubes)
Operating conditions	15 °C to 30 °C, 10% to 75% relative humidity (non-condensing), Installation Category II; Pollution Degree 2
Electrical specifications	100 VAC, 50/60 Hz; 115 VAC, 50/60 Hz; 230 VAC, 50/60 Hz; 1200 watts power consumption
Compliance	CE Mark; EMC directive (2004/108/EC); Low voltage directive (2006/95/EC); HI-POT (1900 VDC, 60 sec.); ROHS
Data output	RS-232 via DB-9 connector

miniAV®-HT High Temperature Kinematic Viscometer

miniAV®-HT is a fully automated, single-sample, benchtop viscometer for determining the kinematic viscosity of asphalts at 60 °C and 135 °C. The Ubbelohde-style tube covers a 100-fold viscosity range at values between 0.5 mm^2/s (cSt) and 10,000 mm^2/s (cSt).

Common Applications

- Asphalt binders
- Asphalt cements
- Asphalt cutbacks

Dimensions (W × D × H)	**Unit:** 25.4 cm × 30.5 cm × 59.8 cm (10.0 in × 12.0 in × 23.5 in) **Power Supply:** 33.0 cm × 39.6 cm × 17.2 cm (13.0 in × 15.6 in × 6.8 in) **Waste Receiver:** 33.0 cm × 39.6 cm × 17.2 cm (13.0 in × 15.6 in × 6.8 in)
Weight	**Unit:** 12.5 kg (27.5 lb) **Power Supply:** 11.0 kg (24.0 lb) **Waste Receiver:** 6.0 kg (13.0 lb)
Shipping dimensions (W × D × H)	74.0 cm × 64.0 cm × 92.0 cm (29.0 in × 25.0 in × 36.0 in)

Shipping weight (with all items)	64.0 kg (140.0 lb)
Maximum thoughput	12 tests per hour
Automated sample capacity	1
Viscosity range	0.5 mm^2/s (cSt) to 10,000 mm^2/s (cSt) in 100-fold increments (depending on viscometer tube selection).
Timing resolution	0.01 s (timing accuracy to ± 0.001 s)
Temperature range and accuracy	40 °C to 100 °C, ± 0.01 °C 100 °C to 150 °C, ± 0.02 °C * Alternate bath medium may be required for temperatures below 60 °C or above 135 °C
Minimum sample/solvent volume	5 mL sample/15 mL solvent per test (as little as 3 mL with fast run tubes)
Operating conditions	15 °C to 30 °C, 10% to 75% relative humidity (non-condensing), Installation Category II; Pollution Degree 2
Electrical specifications	100 VAC, 50/60 Hz; 115 VAC, 50/60 Hz; 230 VAC, 50/60 Hz; 1200 watts power consumption
Compliance	CE Mark; EMC directive (2004/108/EC); Low voltage directive (2006/95/EC); HI-POT (1900 VDC, 60 sec.); ROHS
Data output	RS-232 via DB-9 connector

miniAV®-LT Single-Bath Sub-Zero Kinematic Viscometer

miniAV®-LT is a fully automated, single sample, benchtop viscometer for low temperature (sub-zero) viscosity testing. A Ubbelohde-style tube covers a 10-fold viscosity range for values between 1 mm^2/s (cSt) and 20,000 mm^2/s (cSt) from −20 °C to +30 °C.

Common Applications

- Jet fuel
- Turbine oils
- Hydraulic fluids
- Transformer oils

Dimensions (W × D × H)	**Unit:** 25.4 cm × 30.5 cm × 53.4 cm (10 in × 12 in × 21 in) **Power Supply:** 34.3 cm × 39.6 cm × 17.2 cm (13.5 in × 15.6 in × 6.8 in) **Waste Receiver:** 33.0 cm × 39.6 cm × 17.2 cm (13.0 in × 15.6 in × 6.8 in) **Air/Water Heat Exchanger:** 38.6 cm × 51.1 cm × 34.9 cm (15.2 in × 20.1 in × 13.7 in)
Weight	**Unit:** 27 kg (45 lb) **Power Supply:** 11 kg (24 lb) **Waste Receiver:** 6 kg (13 lb) **Air/Water Heat Exchanger:** 14 kg (30 lb)
Shipping dimensions (W × D × H)	**Box 1:** 73.7 cm × 63.5 cm × 94.0 cm (29 in × 25 in × 37 in) **Box 2:** 76.2 cm × 58.4 cm × 83.8 cm (30 in × 23 in × 33 in) **Box 3:** 15.2 cm × 15.2 cm × 28.0 cm (6 in × 6 in × 11 in)

Shipping weight (with all items)	98.9 kg (218 lb)
Maximum thoughput	1 test per hour
Automated sample capacity	1
Viscosity range	Up to 20,000 mm²/s (cSt) in 10-fold increments (depending on viscometer tube selection).
Timing resolution	0.01 s (timing accuracy to ± 0.001 s)
Temperature range and accuracy	−20 °C to 30 °C, ± 0.02 °C
Minimum sample/solvent volume	5 mL sample/15 mL solvent per test
Operating conditions	15 °C to 30 °C, 10% to 75% relative humidity (non-condensing), Installation Category II; Pollution Degree 2
Electrical specifications	100 VAC, 50/60 Hz; 115 VAC, 50/60 Hz; 230 VAC, 50/60 Hz; 1000 watts power consumption
Compliance	CE Mark; EMC directive (2004/108/EC); Low voltage directive (2006/95/EC); HI-POT (1900 VDC, 60 sec.); ROHS
Data output	RS-232 via RS-485

miniAV®-X Single-Bath Kinematic Viscometer

miniAV®-X is a fully automated, single-bath, benchtop viscometer with a 10-position sample handler for unattended D445 processing. The Ubbelohde-style tube covers a 100-fold viscosity range between 0.5 mm²/s (cSt) and 6,000 mm²/s (cSt) from 15 °C to 100 °C (with available TE cooler).

Common Applications

- Formulated oil analysis
- Hydraulic oil analysis
- Additive analysis
- Marine fuel testing
- Base stock analysis
- Light and heavy fuel testing
- Waxes/paraffin
- Crude oil testing
- Glycols

Dimensions (W × D × H)	**Unit:** 25.4 cm × 43.7 cm × 52.6 cm (10.0 in × 17.2 in × 20.7 in) **Power Supply:** 33.0 cm × 39.6 cm × 17.2 cm (13.0 in × 15.6 in × 6.8 in) **Waste Receiver:** 33.0 cm × 39.6 cm × 17.2 cm (13.0 in × 15.6 in × 6.8 in)
Weight	**Unit:** 18.0 kg (40.0 lb) **Power Supply:** 11.0 kg (24.0 lb) **Waste Receiver:** 6.0 kg (13.0 lb)
Shipping dimensions (W × D × H)	73.7 cm × 63.5 cm × 94.0 cm (29.0 in × 25.0 in × 37.0 in)
Shipping weight (with all items)	63.5 kg (140.0 lb)
Maximum thoughput	12 tests per hour
Automated sample capacity	10
Viscosity range	0.5 mm²/s (cSt) to 10,000 mm²/s (cSt) in 100-fold increments (depending on viscometer tube selection). Fast run tubes are also available.
Timing resolution	0.01 s (timing accuracy to ± 0.001 s)
Temperature range and accuracy	20 °C to 100 °C, ± 0.01 °C (temperatures within 5 °C of ambient and below require bath cooling) Down to 15 °C, ± 0.03 °C (temperatures within 5 °C of ambient and below require bath cooling)
Minimum sample/solvent volume	5 mL sample/15 mL solvent per test (as little as 3 mL with fast run tubes)
Operating conditions	15 °C to 30 °C, 10% to 75% relative humidity (non-condensing), Installation

	Category II; Pollution Degree 2
Electrical specifications	100 VAC, 50/60 Hz; 115 VAC, 50/60 Hz; 230 VAC, 50/60 Hz; 1000 watts power consumption
Compliance	CE Mark; EMC directive (2004/108/EC); Low voltage directive (2006/95/EC); HI-POT (1900 VDC, 60 sec.); ROHS
Additional standard features	Internal heated waste drain lines, dual solvent input
Data output	RS-232 and RS-485

miniPV® Single-Bath Dilute Solution Polymer Viscometer

miniPV® is a fully-automated, single sample, benchtop viscometer for testing dilute solution viscosity of polymers in organic solvents and aqueous solutions. The Ubbelohde-style tube covers a 100-fold viscosity range between 0.3 cSt and 5,000 cSt from 20 °C to 100 °C.

- Elastomers
- Plastics
- Thermoplastic elastomers
- Copolymers
- Biopolymers
- Polymer blends
- Oligomers
- Pre-polymers
- Resins
- Viscosity modifiers

Designed to meet specific polymer industry needs

- Compatible with organic solvents and aqueous solutions
- On-board software with specialized polymer calculations determines relative, inherent, reduced, specific and intrinsic viscosity
- Superb temperature control (±0.01°C) from 20° C to 100 °C (with available options)
- Kinematic viscosity range: 0.3 mm²/s (cSt) to 5,000 mm²/s (cSt) in 100-fold increments. Special ranges available upon request.

Compact, robust design

- Fits in roughly the same bench-top area as an analytical balance
- Conserves valuable lab space
- Proven CANNON® viscometer platform offers reliability and outstanding support
- Optional Peltier cooling is environmentally friendly and requires no external refrigeration

Fully automated bench-top testing

- Software controls the instrument and facilitates tasks such as calibration, data entry, method specification, calculation selection, report formatting, and data exporting
- Single PC manages up to 4 instruments using VISCPRO® software
- Reduces operator to operator variability

Reduced consumable costs

- ASTM D 446/ISO 3105 Ubbelohde-style tube reduces solvent usage and disposal costs by 50%
- Automated vial washing & drying reduces vial consumption and replaces manual washing

Simplified maintenance & test versatility

- Modular bath for easy maintenance access
- Viscometer tube replacement completed in minutes
- Single-point temperature calibration avoids need for tube recalibration and maximizes test flexibility

miniPV®-HX Hardened Single-Bath Dilute Solution Polymer Viscometer

miniPV®-HX is a fully automated, single-bath, benchtop viscometer with a 10-position sample handler for unattended processing and testing of dilute solution viscosity of polymers in aggressive solvents and corrosive acids. The Ubbelohde-style tube covers a dilute solution polymer viscosity range between 0.02 mm²/s (cSt) and 700 mm²/s (cSt) from 15 °C to 100 °C. Available tubes cover a kinematic viscosity range of 0.3 mm²/s (cSt) to 1200 mm²/s (cSt) with extended KV range tubes available upon request.

Common applications

- Thermoplastics
- Polyamides
- Biopolymers

Dimensions (W × D × H)	**Unit:** 25.4 cm × 39.6 cm × 78.7 cm (10.0 in × 15.6 in × 30.5 in) **Power Supply:** 33.0 cm × 39.6 cm × 17.2 cm (13.0 in × 15.6 in × 6.8 in) **Waste Receiver:** 33.0 cm × 39.6 cm × 17.2 cm (13.0 in × 15.6 in × 6.8 in)
Weight	**Unit:** 24 kg (53 lb) **Power Supply:** 11 kg (24 lb) **Waste Receiver:** 6 kg (13 lb)
Shipping dimensions (W × D × H)	73.7 cm × 63.5 cm × 94.0 cm (29.0 in × 25.0 in × 37.0 in)
Shipping weight (with all items)	63.5 kg (140 lb)
Maximum thoughput	12 tests per hour
Automated sample capacity	10
Viscosity range*	**Dilute Solution:** 0.02 mm²/s (cSt) to 700 mm²/s (cSt) **Kinematic:** 0.3 mm²/s (cSt) to 1200 mm²/s (cSt) * depending on viscometer tube selection
Timing resolution	0.01 s (timing accuracy to ± 0.001 s)
Temperature range and accuracy	20 °C to 100 °C, ± 0.01 °C Down to 15 °C, ± 0.03 °C
Minimum sample/solvent volume	8 mL sample/15 mL solvent per test (as little as 3 mL with fast run tubes)
Operating conditions	15 °C to 30 °C, 10% to 75% relative humidity (non-condensing), Installation Category II; Pollution Degree 2
Electrical specifications	100 VAC, 50/60 Hz; 115 VAC, 50/60 Hz; 230 VAC, 50/60 Hz; 1000 watts power consumption
Compliance	CE Mark; EMC directive (2004/108/EC); Low voltage directive (2006/95/EC); HI-POT (1900 VDC, 60 sec.); ROHS
Additional standard features	Internal heated waste drain lines, dual solvent input
Data output	RS-232 and RS-485

miniPV®-X Single-Bath Dilute Solution Polymer Viscometer

miniPV®-X is a fully-automated, single-bath, benchtop viscometer with a 10 position sample handler for unattended processing and testing of dilute solution viscosity of polymers in organic solvents and aqueous solutions. The Ubbelohde-style tube covers a 100-fold viscosity range between 0.3 cSt and 5,000 cSt from 20 °C to 100 °C.

- Elastomers
- Plastics
- Thermoplastic elastomers
- Copolymers
- Biopolymers
- Polymer blends
- Oligomers
- Pre-polymers
- Resins
- Viscosity modifiers

Designed to meet specific polymer industry needs

- Compatible with organic solvents and aqueous solutions
- On-board software with specialized polymer calculations determines relative, inherent, reduced, specific and intrinsic viscosity
- Superb temperature control (±0.01°C) from 20 °C to 100 °C (with available options)
- Kinematic viscosity range: 0.3 mm²/s (cSt) to 5,000 mm²/s (cSt) in 100-fold increments. Special ranges available upon request.

Compact, robust design

- Fits in roughly the same bench-top area as an analytical balance
- Conserves valuable lab space
- Proven CANNON® viscometer platform offers reliability and outstanding support
- Optional Peltier cooling is environmentally friendly and requires no external refrigeration

Fully automated bench-top testing

- Software controls the instrument and facilitates tasks such as calibration, data entry, method specification, calculation selection, report formatting, and data exporting
- 10 position sample handler for unattended operation
- Single PC manages up to 4 instruments using VISCPRO® software
- Reduces operator to operator variability

Reduced consumable costs

- ASTM D 446/ISO 3105 Ubbelohde-style tube reduces solvent usage and disposal costs by 50%
- Automated vial washing & drying reduces vial consumption and replaces manual washing

Simplified maintenance & test versatility

- Modular bath for easy maintenance access
- Viscometer tube replacement completed in minutes
- Single-point temperature calibration avoids need for tube recalibration and maximizes test flexibility

miniQV®-X Single-Bath Kinematic Viscometer

miniQV®-X is a fully automated, single-bath, benchtop viscometer for rapid kinematic viscosity measurement. A 25-position sample handler allows unattended processing. The fast-run tube covers a 10-fold viscosity range between 5 mm²/s (cSt) and 800 mm²/s (cSt) from 40 °C to 100 °C. Offering near-D445 precision, the miniQV-X has been optimized for condition monitoring of used oils.

Common Applications

- In-service oil viscosity
- Used oil analysis
- Fleet maintenance
- Condition monitoring