CAV® 4.2
Dual-Bath Benchtop Kinematic Viscometer

For Kinematic Viscosity of Transparent and Opaque Liquids
ASTM D445/D446, ISO 3104/3105, IP 71, SAE J300

CAV 4.2 is a fully automated, dual-bath, benchtop viscometer with two 14-position sample handlers for unattended D445 processing. Each of the two tubes (one per bath) covers a 100-fold viscosity range at values between 0.5 mm²/s (cSt) and 10,000 mm²/s (cSt) from 15 °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

D2270 Viscosity Index Calculation

- VISCPRO® software included for calculation

D445 precision in a modern, dependable design

- Temperature range: ambient to 100 °C (15 °C to 150 °C with available bath options)
- Viscosity range: 0.5 mm²/s (cSt) to 10,000 mm²/s (cSt) in 100-fold increments* (easily covering the range of 5 separate manual glass viscometers)
- Dual, independent baths enable simultaneous testing at two different temperatures
- Two fully accessible, 14-position sample handlers ensure reliable, unattended processing of up to 24 determinations per hour
- Automation provides an alternative to labor-intensive manual testing and reduces operator to operator variability
- A trusted CANNON® viscometer platform offers reliability and dependable support

Compact & self-contained with flexible configuration

- Simple, out-of-the-box installation
- 35% smaller footprint than CAV-2000 series conserves lab space
- Optional, eco-friendly Peltier cooling requires no external refrigeration
- Onboard computer permits preprogrammed test parameters to be run without an external PC
- VISCPRO PC software enables programming of user-defined test methods and permits one PC to manage and control up to four instruments
- User-configurable reports may be viewed, printed, saved, and exported

INCLUDES
- ✓ VISCPRO Software
- ✓ Viscometer Tubes
- ✓ Standards
- ✓ Digital Thermometer

Reduced consumable costs

- Next generation Atlantic-style tubes reduce solvent usage and disposal costs by 50% over larger predecessor tubes
- Automated vial washing and drying enables reuse and reduces vial consumption

Simplified maintenance & test versatility

- Modular bath for easy maintenance access
- Operators physically replace tubes in minutes, eliminating the need for related service calls
- Colored status indicator bath lights provide a simple indication of operational status
- Multiple predefined/user-defined test methods can be run within the same sample tray
- High throughput, selective zone heating of individual samples to temperatures from ambient to 100 °C
- Instrument includes standard dual-solvent input

CANNON INSTRUMENT COMPANY
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CAV® 4.2 | Dual-Bath Kinematic Viscometer

Ordering Information

CAV 4.2 Dual-Bath Kinematic Viscometer comes with two 14-position sample carousels, two viscometer tubes, one set of oil viscosity standards, a case of glass vials, a high precision digital thermometer with probe, and VISCPRO® data storage/management software. Specify desired factory installed options and viscometer tubes when ordering.

Instrument is stand-alone but optional computer (sold separately) is recommended for ease of calibration, connecting to LIMS (laboratory information management system), and maintaining complete audit trail.

Description	Part #
100 VAC, 50/60 Hz, 1200 watts	9725-B30
115 VAC, 50/60 Hz, 1200 watts	9725-B35
230 VAC, 50/60 Hz, 1200 watts	9725-B40

Options

Factory installed options must be specified when ordering. Part numbers are listed below for field installed options. Field installation must be performed by factory-trained personnel (unless indicated by a dagger†). Field installation costs are additional.

Description	Part #
Sample preheater for glass vials (left/right)	68.0538/68.0540
Sample preheater for metal sleeves (left/right)	68.0537/68.0539
Sample carousel safety cover†	68.0299
Integrated thermoelectric bath cooling (per bath)	68.0541
External heated waste drain lines†	68.3112
Laser printer†	93.6005
Enhanced vapor reduction (100 VAC & 115 VAC/230 VAC)	68.0484/68.0485

NOTE: A third solvent input, integrated high temperature baths (left or right), and additional temperature calibration (for each temperature beyond the first) are also available for an added charge at the time of ordering.

Atlantic-Style Viscometer Tubes*

Standard Tube	Part #	Standard Tube	Part #
KV Range in mm²/s (cSt)			
1-100	12.0690	30-3000	12.0644
2-200	12.0698	40-4000	12.0645
3-300	12.0696	50-5000	12.0646
4-400	12.0699	60-6000	12.0694
6-600	12.0697	70-7000	12.0695
10-1000	12.0642	100-10000	12.0647
20-2000	12.0643		

Product Specifications

Dimensions (W x D x H)	36.0 cm x 66.0 cm x 72.0 cm (14.3 in x 26.0 in x 28.5 in)
Weight	63.0 kg (140.0 lb)
Shipping dimensions (W x D x H)	81.3 cm x 53.3 cm x 99.0 cm (32.0 in x 21.0 in x 39.0 in)
Shipping weight	96.6 kg (213.0 lb)
Max. throughput	24 tests per hour
Automated sample capacity	28 (2 x 14 positions)
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 & accuracy	15 °C to 100 °C ± 0.01 °C (temperatures within 5 °C of ambient and below require bath cooling) Up to 150 °C, ± 0.03 °C (with high temp bath)
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; 1,200 watt 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	USB

Accessories & Consumables

Description	Part #
Extra sample carousel (for glass vials)	68.0049
Extra sample carousel (for metal sleeves)	68.0564
Metal sleeves (for waxy samples); case of 14	68.0455
Pedestal base (fits up to two CAV 4.2 units)	68.0298
Replacement silicone bath fluid, 1 L	9726-L40
Spare parts kit (for one year)	68.0542
Tube Cleaning Kit	68.3139
Vials (glass); case of 144	9717-V01
Vials (polypropylene); pack of 1,000	61.3663
Viscosity reference standards	various

*Some upper viscosity measurements may be limited by test temperature and sample type. Ubbelohde-style tubes (for volatile products that are not a pure solvent and high melt waxes) are also available in 100-fold increments and fast run 10-fold increments from 0.5 mm²/s (cSt) to 10,000 mm²/s (cSt).

†Field installation that does not require factory-trained personnel.

CANNON Instrument Company® provides a variety of physical property testing equipment and consumables (vials, bath fluids, and reference materials) for your testing needs. To learn more, contact sales@cannoninstrument.com.

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