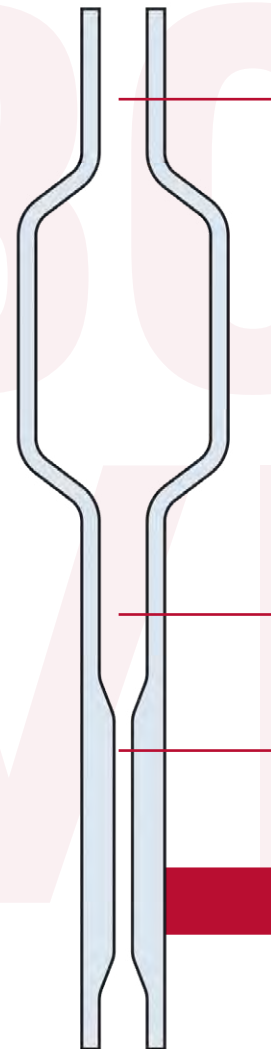




**Three
generations.
One perfect
CAV.TM**

Cannon is the Viscosity Standard.

How Does the CAV 5 Work?



Time (t) as measured by automatic sensors when a fixed volume of sample drops under the force due to gravity.

C = an unchanging constant based on the dimensions of the glass capillary

$$\text{Viscosity (v)} = C \times t$$

CAV 5 – The Direct Route to KV

The Cannon gravity glass capillary viscometer directly measures KV viscosity by the simple equation found in ASTM D445/D446. (see section 7.1.2).

$$\text{Viscosity (v)} = C \times t$$

Where v = kinematic viscosity (KV); C = an unchanging constant based on the dimensions of the glass capillary, and t = time for a fixed volume of the fluid to fall through the capillary. In this approach, the force due to gravity is constant and pulls the fluid down through the capillary as the drop time is measured by automatic sensors. This is, by far, the most simple and direct way to measure kinematic viscosity because it uses the constant force of gravity.

Alternative designs rely on complicated mechanisms rotating at thousands of RPM and use assumptions that are never explained. These alternative methods show that 7 of 8 of the most common petroleum products must be bias corrected to give equivalent results to CAV 5.

Users of alternative methods carry the constant burden of extra verifications, calibrations, and adjustments and can't be sure their instrument is properly tuned for their particular sample. By contrast, the CAV 5 users simply push a button, gravity does its work, and time is automatically measured.

One Platform. Any Sample. Total Control.

The CAV 5 unites the best of three proven instrument generations and powerful new capabilities in one platform. Built on decades of Cannon expertise, CAV 5 combines trusted accuracy with advanced thermal control, superior automated cleaning and expanded features to deliver consistent performance across every application. The CAV 5 family complies with ASTM D445/D446, ISO 3104/3105, SAEJ300, and ASTM D2270.

From routine measurements to the most demanding samples, this platform gives every user the confidence to achieve precise, repeatable results.

The CAV 5 single-bath configuration eliminates the compromises inherent in multi-tube and multi-bath systems.

Combined with a next-generation intuitive interface, autonomous operation and Sync Anywhere™ capabilities, the CAV 5 enables the most flexible deployment options for your lab.

Have complete control over how testing is standardized, executed and scaled across your organization.

The result is a viscometry platform that delivers exceptional capability, reliability and control.



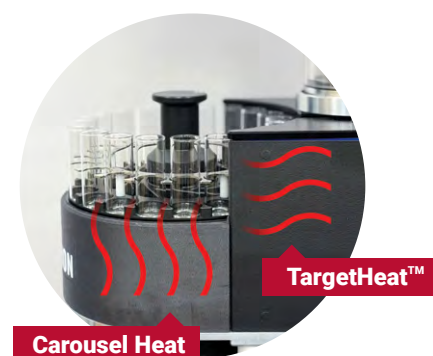
All the Innovation of Cannon in One Platform.

The CAV 5 family is the culmination of three proven instrument generations: the CAV 2100, mini AV and CAV 4. We have combined their most trusted capabilities and enhanced them with new innovations in a single, unified platform.

Built on decades of proven performance and engineering experience, CAV 5 delivers the highest level of capability Cannon has offered to date. This is Cannon's most compact design yet, giving you the freedom to install it anywhere and control testing from wherever you choose.

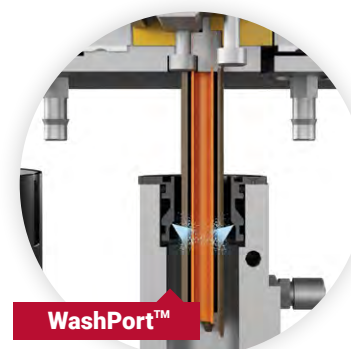
Greater Confidence for Any Sample.

CAV 5 performs consistently across the full spectrum of sample types, from routine to highly challenging materials. It also delivers a wider operating sweet spot, allowing more samples to run smoothly with less adjustment and greater confidence which is enabled by many features.



Carousel Heat

Provides automated pre-heating of samples, enabling viscous materials to reach test-ready conditions efficiently. The result is reliable handling and analysis of even the most viscous samples. Both carousel heat and TargetHeat include heated waste lines to prevent clogging of high viscosity or solidifying samples.



TargetHeat™

Protects all samples from overheating by targeting only those which need thermal conditioning. This maintains sample stability and ensures accurate, repeatable test results.



WashPort™

Enables efficient tube-tip cleaning without drawing the entire sample into the viscometer. This improves throughput, reduces solvent consumption, boosts sample retention and waste handling workflows. WashPort™ and Vial Wash both provide adjustable solvent volume and cleaning intensity, enabling efficient removal of even the most challenging sample residues.

Vial Wash

Thoroughly cleans vials to allow their reuse and proper waste handling. It ensures hazardous residues are removed and directed to the correct waste stream.

Start Optimization

Improves throughput via a guided routine that automatically establishes the appropriate thermal soak and sample draw settings for each sample type, which can be recalled for future use.

Run True

Delivers real-time monitoring of potential sample artifacts, such as bubbles and sag during the sample draw and drop phases. Automatically adjusts to eliminate these effects and marks the data record for valuable insights for consistent results.

Sealed Vials

Enables safe, accurate testing of moisture-sensitive and volatile materials; extending application range and improving data reliability.

Total Control: Scale Your Lab Without Compromise

Whether expanding capacity, adapting to new test demands, or driving compliance across locations, the CAV 5 enables laboratories to grow without trade-offs.

Sync Anywhere™ powered by FlowHub™ provides centralized deployment of approved methods, settings, and carousel data to the autonomous instruments. Test results and instrument settings from the autonomous instruments are automatically collected and stored centrally, supporting global data visibility, archiving, and LIMS access across all CAV 5, CCS-G6, and UltraVis instruments. This bi-directional synchronization drives consistency, efficiency, and method compliance across laboratories worldwide.

A next-generation intuitive user interface simplifies operation through easy test setup, customizable dashboards, priority sample handling, and user-level controls, reducing variability and improving efficiency across operators.

Autonomous operation, compact size, and improved fume mitigation allow for instruments to be installed anywhere they best support the workflow without the need for dedicated computers or extra lab infrastructure.

Underpinning these capabilities, the **CAV 5 single-bath design** eliminates the scaling compromises inherent in multi-bath systems—allowing each system to be optimized for its specific application while providing built-in redundancy that enhances reliability and uptime.



CAV-D Dual:
Routine,
High-Throughput
Testing.

The CAV-D Dual is ideal for laboratories that value reliability and efficiency in performing routine sample testing. While offered as an economical paired solution, each instrument operates independently; enabling labs to deploy them together or at separate locations as needed. Both units operate at a single calibrated temperature, delivering consistent, high-throughput performance.

CAV-D Dual is best suited for labs with fixed-temperature methods and high throughput.

CAV-D:
Routine Testing
with Scalable
Flexibility.

The CAV-D provides laboratories with reliability and efficiency in performing routine sample testing at a single temperature. The CAV-D can be combined with other CAV-D, CAV-X, or CAV-R instruments to provide flexibility in temperature, throughput, and scalability.

CAV-D is ideal for laboratories that require routine testing and flexible workflows.

CAV-X: Flexible
Configuration
for Evolving
Lab Needs.

The CAV-X is designed to scale with your lab's varying capacity and temperature requirements. It offers enhanced flexibility and a future-ready feature set. Features include compatibility with all vial options and can be configured with an extended temperature range, optical sensors, and vial wash capabilities.

CAV-X is best for multi-product labs that need flexible configuration and room to adapt as testing requirements change.

CAV-R: Maximum
Capability for the
Most Demanding
Applications.

The CAV-R is the most advanced member of the CAV 5 family, built for laboratories that run a broad variety of samples. It features Carousel Heat and TargetHeat, the widest-range temperature capability, three-solvent support, plus the Vial Wash and optical sensor options. Making the CAV-R optimized for the most challenging materials.

The CAV-R delivers the full power of the CAV 5 platform and is best for those customers that need the widest testing range for the most difficult applications.



Making Confidence Count.

Cannon Instrument Company has a long-standing leadership role in ASTM International, actively contributing to the development and refinement of viscosity measurement standards used worldwide. This involvement ensures our solutions not only meet industry requirements but help define the methodologies laboratories rely on for accurate, repeatable results.

At our State College, Pennsylvania facility, Cannon manufactures precision glass capillary viscometers using advanced glassblowing techniques and rigorous quality controls. Our capabilities span a broad viscosity range, supporting applications from low-viscosity fuels and solvents to high-viscosity polymers and heavy oils. These instruments are supported by ISO/IEC 17025-accredited measurement and calibration services, demonstrating our ability to deliver highly accurate, traceable results with well-defined uncertainty.

Cannon is also accredited to ISO 17034 for the production of certified reference materials, extending beyond measurement into the full lifecycle of viscosity standards, including manufacturing, certification, and long-term stability. This distinction underscores our expertise not only in measuring viscosity, but in defining and maintaining the standards themselves.

Our relationship with the National Institute of Standards and Technology (NIST) reflects this leadership. NIST turned to Cannon to develop and produce viscosity standards, entrusting us with a critical role in establishing traceability for laboratories worldwide. Today, Cannon continues to manufacture these standards, which are widely used across industry, including by other instrument manufacturers, reinforcing our position as a global authority in viscosity measurement and reference materials.



Viscometer Tubes

KV Range in
mm²/s (cSt)

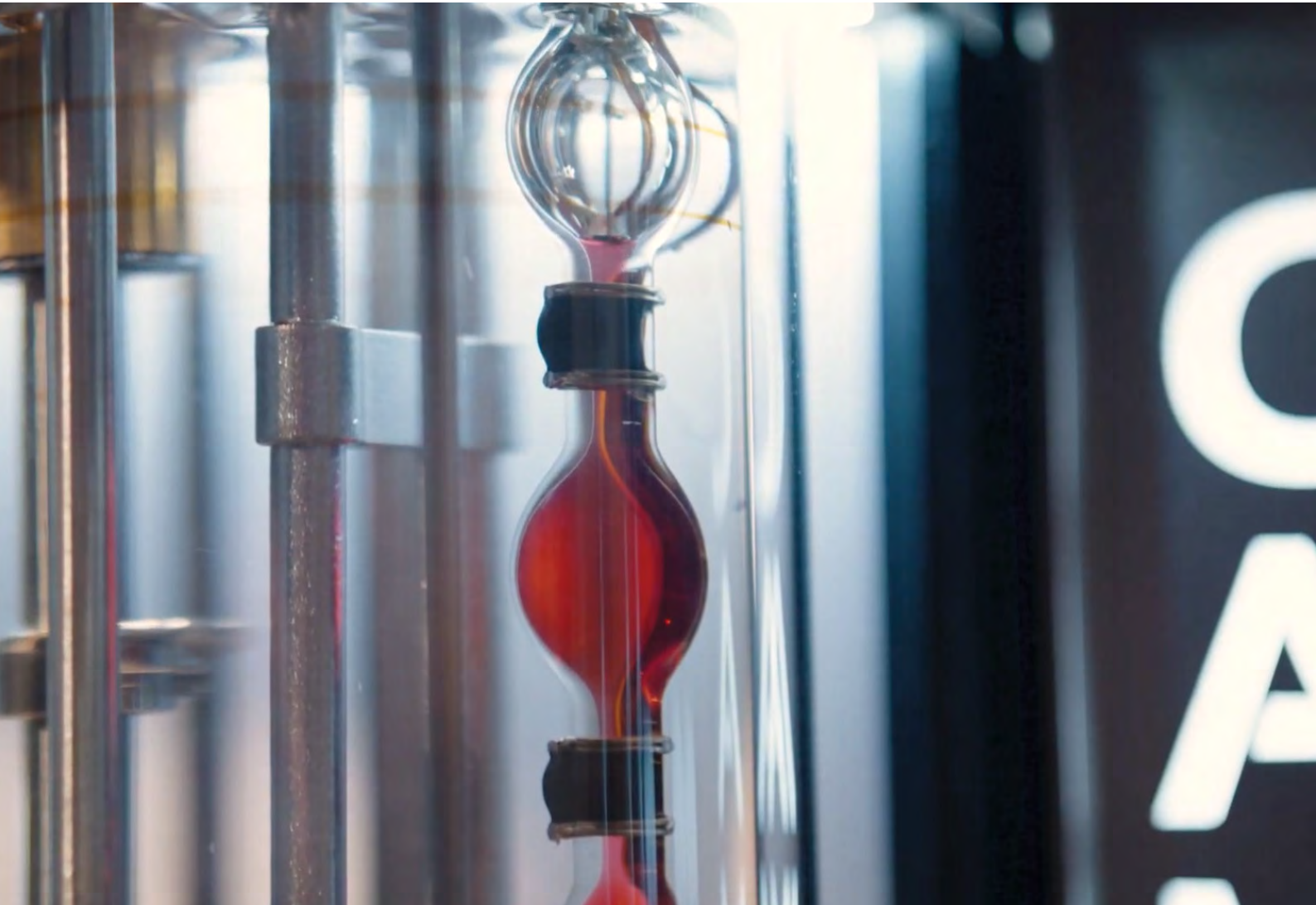
- 0.3 - 30
- 0.5 - 50
- 0.6 - 60
- 1 - 100
- 2 - 200
- 3 - 300
- 4 - 400
- 5 - 500
- 6 - 600
- 7 - 700
- 8 - 800
- 9 - 900
- 10 - 1000
- 20 - 2000
- 30 - 3000
- 40 - 4000
- 50 - 5000
- 60 - 6000
- 70 - 7000
- 100 - 10,000

Note: Additional tube ranges in the Atlantic and Ubbelohde styles, including fast run tubes, are available depending on viscosity range and temperature of the application.



Product Specifications and Viscometer Tube Range

Dimensions (W x D x H)	21.6 cm x 63.5 cm x 75 cm (8.5 in x 25 in x 29.5 in)
Weight Unit	32.7 kg (72 lb)
Shipping dimensions (W x D x H)	82 cm x 51.5 cm x 98 cm (32.25 in x 20.25 in x 38.5 in)
Shipping weight: (with all items)	73 kg (161 lb)
Maximum throughput	Up to 6 samples per hour
Automated sample capacity	10/20/18
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.
Temperature range & accuracy	40 °C to 100 °C ± 0.01 °C 15 °C to 100 °C ± 0.01 °C (temperatures within 5 °C of ambient and below require the low temperature bath option) Up to 150 °C, ± 0.03 °C (with high temp bath)
Timing resolution	0.001 s (timing accuracy to ± 0.001 s)
Minimum sample 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	85 to 265 VAC, 50/60 Hz; 600 watts power consumption
Compliance	CE Mark; EMC directive (2014/30/EV); Low voltage directive (2014/35/EC); HI-POT (1900 VDC, 60 sec.); ROHS
International Standard Compliance	ASTM D445/D446, ISO 3104/3105, IP 71, SAE J300, ASTM D2270



WHICH CAV 5 IS
RIGHT FOR YOU?
Find your fit right here.



MODEL NAME _____	CAV-D	CAV-X	CAV-R
TOUCHSCREEN _____	10.1 inches	12.1 inches	12.1 inches
VISCOSITY RANGE _____	0.5 – 10,000 mm ² /s (cSt)	0.5 – 10,000 mm ² /s (cSt)	0.5 – 10,000 mm ² /s (cSt)
SOLD AS _____	Single and Dual units	Single unit	Single unit
Carousels/vials			
10-position carousel	✓	✓	✓
20-position carousel	✓	✓	✓
Carousel heat	✓	✓	✓
Sealed vial carousel kit (18 position)	—	✓	✓
TargetHeat™	—	—	✓
Temperature Range			
Standard bath (40°C to 100°C)	Fixed temperature	✓	✓
Wide range bath (15°C to 150°C)	—	—	✓
Low temperature bath (15°C to 100°C)	—	✓	✓
High temperature bath (40°C to 150°C)	—	✓	✓
Step Iso temperature scan	—	—	✓
Sensors			
Thermistor	✓	✓	✓
Optical	—	✓	✓
Cleaning			
WashPort™	✓	✓	✓
2 Solvents	✓	✓	✓
Wash in Vial Kit	—	✓	✓
3 Solvents	—	—	✓

✓

Standard

✓

Optional

✓

Order at purchase

—

Not available





CANNON
CONFIDENCE COUNTS.™