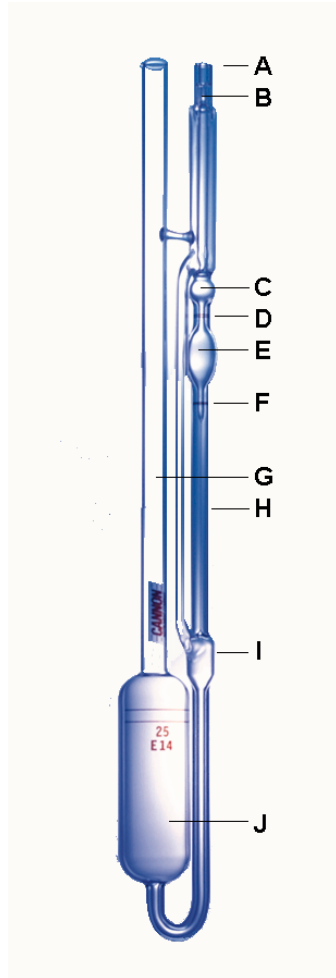


# Instructions for the use of The Cannon-Ubbelohde Semi-Micro Viscometer The Cannon-Ubbelohde Dilution Viscometer

See also ASTM D 445, D 2170, D 446, and ISO 3105



1. Clean the viscometer using suitable solvents, and dry by passing clean, dry, filtered air through the instrument to remove the final traces of solvents. Periodically, traces of organic deposit should be removed with chromic acid or non-chromium cleaning solution.
2. If there is a possibility of lint, dust, or other solid material in the liquid sample, filter the sample through a fritted glass filter or fine mesh screen.
3. Charge a measured volume of sample (Dilution type: approx. 8 mL Semi-Micro; approx. 1 mL) directly from the pipette through tube L into the lower reservoir of the viscometer. If dilutions are not to be made, it is not necessary to measure the volume of the sample. mL) directly from the pipette through tube G into the lower reservoir of the viscometer. If dilutions are not to be made, it is not necessary to measure the volume of the sample.
4. Place the viscometer into the holder and insert it into the constant temperature bath. Vertically align the viscometer in the bath if a self-aligning holder has not been used.
5. Allow approximately 15 minutes for the sample to come to the bath temperature.
6. Place a finger over tube B and apply suction to tube A until the liquid reaches the center of bulb C. Remove suction from tube A. Remove finger from tube B, and immediately place it over tube A until the sample drops away from the lower end of the capillary into bulb I. Then remove finger and measure the efflux time.
7. To measure the efflux time, allow the liquid sample to flow freely down past mark D, measuring the time for the meniscus to pass from mark D to mark F.
8. Calculate the kinematic viscosity of the sample by multiplying the efflux time by the viscometer constant.
9. Without recharging the viscometer, make check determinations by repeating steps 6 to 8.
10. Dilution option: Dilute sample by adding measured quantity of solvent from pipette directly into the lower reservoir of the viscometer. Mix the original sample and the solvent by applying slight pressure to tube B several times, and shaking the viscometer.
11. Repeat steps 5 to 9. Additional dilution may be made if necessary.

## RECOMMENDED VISCOSITY RANGES FOR THE CANNON-UBBELOHDE SEMI-MICRO AND CANNON- UBBELOHDE DILUTION VISCOMETERS

Size	Approximate Constant	Kinematic Viscosity Range	
	mm <sup>2</sup> /s <sup>2</sup> , (cSt/s)	mm <sup>2</sup> /s, (cSt)	
25	0.002	0.4	to 2
50	0.004	0.8	to 4
75	0.008	1.6	to 8
100	0.015	3	to 15
150	0.035	7	to 35
200	0.1	20	to 100
300	0.25	50	to 250
350	0.5	100	to 500
400	1.2	240	to 1200
450	2.5	500	to 2500
500	8	1600	to 8000
600	20	4000	to 20000

The expanded uncertainty with 95% confidence of the calibration measurements relative to the primary standard is as follows:

Range of Constants mm <sup>2</sup> /s <sup>2</sup>	Expanded Uncertainty
up to 5	± 0.34%
5 to 50	± 0.45%
Greater than 50	± 0.69%

The assigned uncertainty of the primary viscosity standard at 20°C is ± 0.17%. See ISO 3666.

THIS PRODUCT WAS CALIBRATED WITHIN A QUALITY SYSTEM WHICH IS REGISTERED TO ISO 9002.