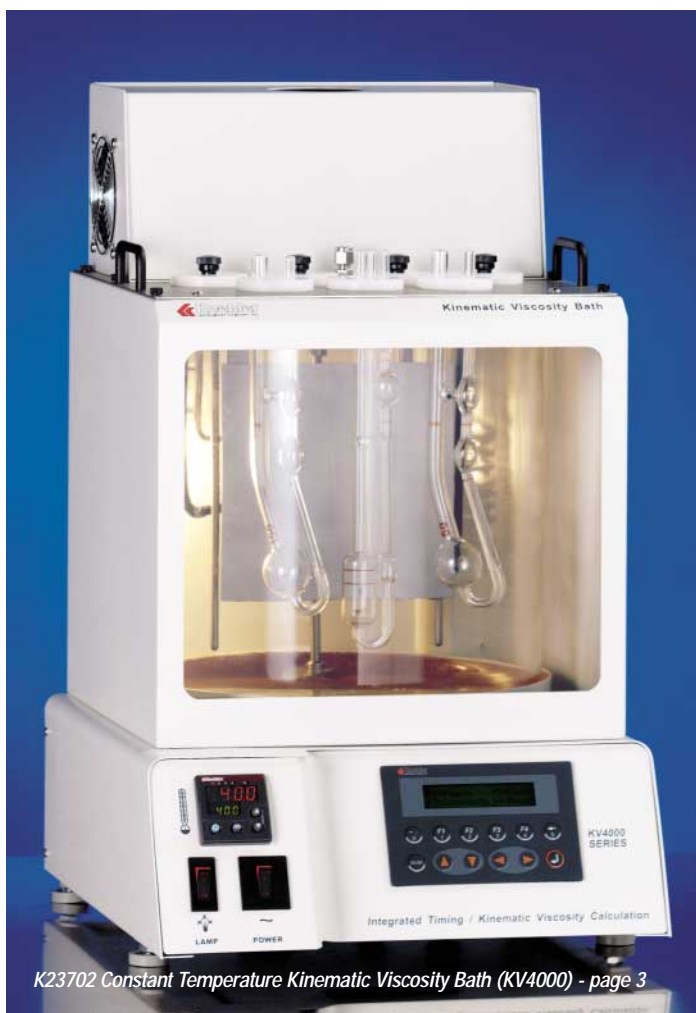


# VISCOSITY

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# Kinematic Viscosity



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## Kinematic Viscosity of Transparent and Opaque Liquids

## Kinematic Viscosity of Asphalts (Bitumens)

## Viscosity of Asphalts by Vacuum Capillary Viscometer

## Viscosity and Viscosity Change After Standing at Low Temperature of Aircraft Turbine Lubricants

### Test Method

Kinematic viscosity is of primary importance in the design and selection of a wide range of petroleum products. Calibrated capillary viscometers are used to measure flow under gravity or vacuum at precisely controlled temperatures.

### Kinematic Viscosity Test Equipment

- Constant temperature baths for the full range of viscosity applications, from low temperature to high temperature
- Calibrated glass capillary kinematic viscometers
- Viscosity standards
- Viscometer cleaning and drying apparatus
- Kinematic viscosity thermometers



Viscosity Reference Standards - pages 18-19

### Kinematic Viscosity product specifications and ordering information:

Digital Constant Temperature Kinematic Viscosity Baths	pages 3-4
Digital High Temperature Kinematic Viscosity Baths	page 5
Digital Refrigerated Kinematic Viscosity Baths	page 6
Automated Kinematic Viscosity System	page 7
Viscometer Holders	page 8
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Digital Stopwatch	page 8
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Viscometer Cleaning and Drying Apparatus	page 9
Kinematic Viscosity Thermometers	page 9
Calibrated Glass Capillary Kinematic Viscometers	pages 10-13
Vacuum Regulator	page 13
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# Kinematic Viscosity

## KV3000 and KV4000 Constant Temperature Baths with Integrated Digital Timing

- Microprocessor temperature control between ambient and 150°C (302°F), and down to -20°C (-4°F) with an external chiller
- Integrated digital timing for easy measurement of sample efflux times
- KV4000 permits entry of viscometer constants for automatic calculation and display in viscosity units or seconds
- Dual digital displays show setpoint and actual bath temperature
- Selectable temperature scale - Fahrenheit or Celsius
- Integrated redundant overtemperature and low liquid level cut-off circuitry
- Conforms to ASTM D445, D2170 and related specifications

Constant temperature bath series with advanced temperature control circuitry and integrated timing features for convenient, accurate glass capillary viscometry determinations. Microprocessor PID circuitry assures precise, reliable temperature control within ASTM specified tolerances throughout the operating range of the bath. Simple push-button controls and dual digital displays permit easy setting and monitoring of bath temperature. Two place calibration offset capability is provided. Baths accommodate seven glass capillary viscometers of various types - see pages 10-13 for complete selection. Viewing the viscometers is made easy by glare-free fluorescent illumination inside the bath and a baffle that provides a background for easy viewing. Temperature control uniformity is assured by means of motorized stirrer which provides complete circulation without turbulence. Connection of the built-in cooling coil to tap water or a recirculating water chiller facilitates temperature control at ambient or below ambient temperatures. *Communications software (RS232, etc.) ramp-to-set, and other enhanced features are available at additional cost. Contact your Koehler representative for additional information.*

**Integrated Timing Features** - KV3000 incorporates seven digital timers on the front control panel for convenient timing and monitoring of the efflux interval for each viscometer. On KV4000, the user can enter the viscosity constant for each viscometer on the front LCD control/display, and then get the test result in both efflux time and viscosity units automatically after stopping each timer. All timing functions are displayed in 0.01 or 0.1 second resolution and are accurate within 0.01%.

**Bath Construction and Safety Features** - Bath chamber is a clear Pyrex® vessel enclosed in a polyester-epoxy finished steel housing. Top working surface has seven 2" (51mm) viscometer ports. Front viewing window assures safe, distortion-free viewing. Microprocessor temperature controller incorporates safety circuitry that interrupts power to the heaters in the event of an overtemperature condition or disconnection of the primary probe. For added safety, an adjustable redundant controller with separate sensor probe interrupts power if an overtemperature situation occurs. An integrated low-liquid sensor prevents operation of the bath if the bath liquid is not filled to the proper level, and cuts off power should it fall below during operation. Both overtemperature and low liquid level circuits will latch and prevent further operation of the bath until the fault is removed.

**Dimensions** l x w x h, in. (cm)  
 12" Kinematic Viscosity Bath:  
 20 1/4 x 15 1/4 x 24 1/2 (51 x 39 x 62)  
 Net Weight: 78 lbs (35.5kg)  
 18" Kinematic Viscosity Bath:  
 20 1/4 x 15 1/4 x 30 1/2 (51 x 39 x 77)  
 Net Weight: 90 lbs (41kg)

**Bath Capacity:**  
 12": 5.8 gal (22L)  
 18": 8.9 gal (33.7L)

**Included Accessories**  
 Port covers, Delrin® (7)  
 Thermometer holder



K23700 Constant Temperature Kinematic Viscosity Bath (KV3000)

### Specifications

Conforms to the specifications of:

ASTM D445, D2170, D6074, D6158; IP 71, 319; ISO 3104; DIN 51550; FTM 791-305; NF T 60-100

#### Temperature Control

Range: ambient to 150°C (302°F); -20°C to 150°C (-4°F to 302°F) with an external chiller. (Please contact Koehler for chiller options.)

Display: 0.1°C/0.1°F resolution, calibrate to 0.01°C/0.01°F

Control accuracy and uniformity: Exceeds ASTM requirements throughout the operating range

#### Integrated timing

KV3000: Seven individual start/stop timers with displays to 0.01 seconds, accurate to within 0.01%

KV4000: Integrated LCD microcomputer with start/stop buttons and retention of viscometer tube constants, automatic calculation and display in viscosity units or seconds to 0.1s, within 0.01% accuracy.

Communication: RS232 port included with KV4000 (optional for KV3000)

Viscometer ports: Seven round 2" (51mm) ports

Bath Medium: Water or suitable heat transfer fluid - please refer to page 8

### Ordering Information

Catalog No.	Model	Electrical Requirements	Bath Depth
K23700	KV3000	115V 50/60Hz, single phase 12.6A	12" (30.5 cm)
K23702	KV4000		
K23790	KV3000	220-240V 50/60Hz, single phase 7.2A	18" (46 cm)
K23792	KV4000		
K23706	KV3000	115V 50/60Hz, single phase 12.6A	18" (46 cm)
K23708	KV4000		
K23796	KV3000	220-240V 50/60Hz, single phase 7.2A	
K23798	KV4000		







































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