

### Specifications TV2000AKV

Automated Kinematic Viscosity ASTM D445, IP71, ISO/EN 3104



- ⊕ Completely stainless steel
- ⊕ Conforms to ASTM D445
- ⊕ High precision better than  $\pm 0.01^{\circ}\text{C}$
- ⊕ Large windows
- ⊕ Easy to operate

#### General

The Tamson 'tv series' viscometer baths are developed for use in laboratories where temperature stability and precision of equipment are essential. With the TV2000AKV system it is possible to determine viscosity automated which complies with the ASTM D445 and D446 methods. The measuring head is capable to measure both transparent and colored / darker liquids. Via the apparatus menu the sensitivity of the electronic detection system can be adapted. The measuring head can store up to 25 viscometer constants. It is further possible to set the amount of runs (test) per sample. The system determines the best repeatability from the measuring results.

#### Operating range

Working temperature span ranges from ambient temperature  $+5^{\circ}\text{C}$  up to  $130^{\circ}\text{C}$ . With the use of the Tamson TLC15-5 cooling circulator and the built-in cooling coil the minimum working temperature can be lowered down to  $10^{\circ}\text{C}$ . However due to condensation, it is not advisable to work for long periods at these temperatures. The viscosity measurement range is defined by the used glass capillaries and may vary from 0.3 up to  $10.000 \text{ mm}^2/\text{s}$  (cSt).

Item	Unit	TV2000AKV
230V/50-60Hz		00T0820
115V/60Hz		00T0830
Reading		$^{\circ}\text{C}$ or $^{\circ}\text{F}$ menu selectable
Range		Ambient $+ 5^{\circ} \dots +130^{\circ}\text{C}$ ( $226^{\circ}\text{F}$ )
Setting	$[\text{C}^{\circ}]$	0.1
Stability* $\pm$	$[\text{C}^{\circ}]$	0.01
Heating	$[\text{W}]$	Max. 2700
Heaters		3
Bath volume	$[\text{L}]$	20
Timer	$[\text{sec}]$	Max 9999.99
Detection		Infra-Red (IR)
Opening bath	$[\text{mm}]$	130 * 165
Depth	$[\text{mm}]$	300
Length	$[\text{mm}]$	285
Width	$[\text{mm}]$	465
Height	$[\text{mm}]$	585
Weight	$[\text{kg}]$	40
Power max	$[\text{kW}]$	2.8
Safety		CE, mechanical safety cut out
* Measured in water @ $50^{\circ}\text{C}$		

#### Temperature accuracy




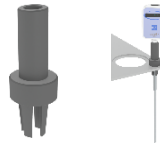

The working temperature can be set in steps of  $0.1^{\circ}\text{C}$ . Overall temperature stability is  $\pm 0.01^{\circ}\text{C}^*$ . With the offset function the temperature reading can be trimmed with a resolution of  $0.01^{\circ}\text{C}$ .

#### Principle of measurement

Viscosity can be determined by measuring the time the sample needs to flow through a defined length of a glass capillary viscometer. This time is in the AKV-system measured via two optical IR sensors. Time, glass capillary viscometer constant and bath temperature result in a viscosity value given in centi – Stokes (cSt). The measurement of the AKV system is fully automated. Filling and cleaning of the glass capillary viscometers needs to be done manually. The AKV system offers the choice to use either Ubbelohde or Cannon Fenske Routine AKV viscometers. For both types a specific measuring head is available. Though the AKV offers the possibility to measure colored / darker liquids, some dark fluids can give difficulties with the optical detection. A sample always can be send to Tamson for testing without costs.

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#### Accessories

P/N	Picture	Description
00T0890		Measuring head AKV Cannon Fenske
00T0840		Measuring head AKV Ubbelohde
00T0565		Cooling circulator TLC15-5 (230V/50Hz)
00T0567		Cooling circulator TLC15-5 (230V/60Hz)
00T0570		Cooling circulator TLC15-5 (115V/60Hz)
00T0233		Vacuum pump (230V/50Hz)
00T0263		Vacuum pump (115V/60Hz)
E20 thermometer		Please see specification sheet "E20 thermometers"
14T0303		Adapter to insert an E20 thermometer in the opening of the cover
AKV Viscometers		Please see next page for AKV Ubbelohde and AKV Cannon-Fenske routine glass capillary viscometers

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#### Glass capillary viscometers

AKV Ubbelohde viscometer for transparent and opaque liquids			
REF 25T0766	Size number 0	Nom. Constant 0.001	Range from 0.3 to 1 mm <sup>2</sup> /s
REF 25T0767	Size number 0C	Nom. Constant 0.003	Range from 0.6 to 3 mm <sup>2</sup> /s
REF 25T0768	Size number 0B	Nom. Constant 0.005	Range from 1 to 5 mm <sup>2</sup> /s
REF 25T0769	Size number 1	Nom. Constant 0.01	Range from 2 to 10 mm <sup>2</sup> /s
REF 25T0770	Size number 1C	Nom. Constant 0.03	Range from 6 to 30 mm <sup>2</sup> /s
REF 25T0771	Size number 1B	Nom. Constant 0.05	Range from 10 to 50 mm <sup>2</sup> /s
REF 25T0772	Size number 2	Nom. Constant 0.1	Range from 20 to 100 mm <sup>2</sup> /s
REF 25T0773	Size number 2C	Nom. Constant 0.3	Range from 60 to 300 mm <sup>2</sup> /s
REF 25T0774	Size number 2B	Nom. Constant 0.5	Range from 100 to 500 mm <sup>2</sup> /s
REF 25T0775	Size number 3	Nom. Constant 1.0	Range from 200 to 1000 mm <sup>2</sup> /s
REF 25T0776	Size number 3C	Nom. Constant 3.0	Range from 600 to 3000 mm <sup>2</sup> /s
REF 25T0777	Size number 3B	Nom. Constant 5.0	Range from 1000 to 5000 mm <sup>2</sup> /s
REF 25T0778	Size number 4	Nom. Constant 10	Range from 2000 to 10000 mm <sup>2</sup> /s



AKV Cannon Fenske Routine viscometer for transparent liquids			
REF 25T0779	Size number 25	Nom. Constant 0.002	Range from 0.5 to 2 mm <sup>2</sup> /s
REF 25T0780	Size number 50	Nom. Constant 0.004	Range from 0.8 to 4 mm <sup>2</sup> /s
REF 25T0781	Size number 75	Nom. Constant 0.008	Range from 1.6 to 8 mm <sup>2</sup> /s
REF 25T0782	Size number 100	Nom. Constant 0.015	Range from 3 to 15 mm <sup>2</sup> /s
REF 25T0783	Size number 150	Nom. Constant 0.035	Range from 7 to 35 mm <sup>2</sup> /s
REF 25T0784	Size number 200	Nom. Constant 0.1	Range from 20 to 100 mm <sup>2</sup> /s
REF 25T0785	Size number 300	Nom. Constant 0.25	Range from 50 to 250 mm <sup>2</sup> /s
REF 25T0786	Size number 350	Nom. Constant 0.5	Range from 100 to 500 mm <sup>2</sup> /s
REF 25T0787	Size number 400	Nom. Constant 1.2	Range from 240 to 1200 mm <sup>2</sup> /s
REF 25T0788	Size number 450	Nom. Constant 2.5	Range from 500 to 2500 mm <sup>2</sup> /s
REF 25T0789	Size number 500	Nom. Constant 8	Range from 1600 to 8000 mm <sup>2</sup> /s
On request	Size number 600	Nom. Constant 20	Range from 4000 to 20000 mm <sup>2</sup> /s

