Kinematic Viscosity of Asphalts (Bitumen)

ASTM D2170 - EN/ISO 12595

Item	Unit	TV2000	TV4000
P/N 230V/50-60Hz		00T0782	00T0772
P/N 115V/60Hz		00T0784	00T0774
Range		Ambient..230°C/446°F	
Reading		°C or °F menu selectable	
Interface		RS232	
Setting ±	[°C]	0.01	
Stability* ±	[°C]	0.01	
Uniformity* ±	[°C]	0.01	
Heating 230V	[kW]	2.8	2.8
Heating 115V	[kW]	2.3	2.3
Heaters		2	2
Bath volume	[L]	20	40
Number of lids		3 or 4	7 or 8
Opening lid	[mm]	ø 51	ø 51
Window	[mm]	140 * 285	270 * 285
Opening bath	[mm]	130 * 165	260 * 240
Depth	[mm]	300	300
Length	[mm]	350	400
Width	[mm]	470	590
Height	[mm]	590	590
Weight	[kg]	40	41
Power	[W]	3100	3100
Frequency	[Hz]	Suited for both 50 & 60	
CE		Conforms to CE regulation	

* Value measured in water @ +50°C/ +122°F

- Completely stainless steel
- Conforms to ASTM D2170 & D445
- High precision stability ± 0.01°C
- Large windows
- Easy to operate
- RS232 communication

General

ASTM D2170 method covers procedures for the determination of kinematic viscosity of liquid asphalts (bitumens), road oils and distillation residues of liquid asphalts (bitumens) all at 60°C (140°F) and of asphalt cements at 135°C (275°F).

Construction

The Tamson TV2000 and TV4000 viscometer baths are specially designed for tests that require ultra-precise temperature control, or processes that need to be followed visually. The stainless steel construction with 25 mm thick rock wool insulation ensures exceptionally stable temperatures which is further improved by an ingenious stirring mechanism with baffle plates. All wetted parts are made of stainless steel, providing resistance against all usual bath fluids. The bath is fitted with adjustable feet for leveling. The cover of the bath has a number of round ø51 mm openings with lids, for suspending glass capillary viscometers in holders. To work at temperatures lower than ambient +5°C, use of cooling must be made.

Cooling fluid can be pumped through the cooling coil inside the apparatus. Tap water or a combination with the external Tamson TLC10-3 or TLC15-5 cooling circulator scan be used for this purpose. All models are fitted with double windows in front and rear walls. The windows are formed with two panes of tempered safety glass separated by 20 mm of air space. Visibility through the bath is excellent. A power plug on the backside is mounted to provide power for an optional Z41 LED illumination unit.

Agitation

A vane type stirrer with brass bearings move the bath fluid past the heaters and then from under the main baffle plate, thus directing the freshly heated fluid inside bath.

Span

All baths can be operated from ambient +5 up to +230°C (41..446°F). With the use of the built-in cooling coil, span lies 5°K above the temperature of the cooling liquid.

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Accuracy and set point
The set point can be set in steps of 0.01°. The system overall accuracy is within ± 0.01°C. After the temperature control is stable, the offset can even be adjusted with ± 0.005°C.

Viscometer arrangement
A cover with seven openings with lids, arranged in two rows of resp. four and three, is provided for the TV4000. The TV2000 offers three openings (2+1). These ø51 mm openings will accommodate glass capillary viscometer in holders (please see our next page). Additionally two separate thermometers can be placed through two ø 12.5 mm openings in the cover.

Safety
The bath conforms to CE regulations. It also is equipped with a mechanical adjustable and resettable safety thermostat. Advanced safety features are microprocessor control of:

- Electronic- and processor system
- Control and feedback from each heating element
- System accuracy

System error results in total cut off from the power supply.

Optional equipment specifically for ASTM D2170
Please see the next page.

TV2000 is standard included with:		
P/N	**Picture**	**Description**
23T2404		Cover with 3 openings: - 3 x ø51 mm opening - 2 x ø12.5mm opening for thermometer
		3 * lid for ø 51 mm opening

Optional cover for TV2000:		
P/N	**Picture**	**Description**
23T2405		Cover with 4 openings: - 4 x ø51 mm opening - 2 x ø12.5mm opening for thermometer
		4 * lid for ø 51 mm opening

TV4000 is standard included with:		
P/N	**Picture**	**Description**
23T2400		Cover with 7 openings: - 7 x ø51 mm opening - 2 x ø12.5mm opening for thermometer
		7 * lid for ø 51 mm opening

Optional cover for TV4000:		
P/N	**Picture**	**Description**
23T2401		Cover with 8 openings: - 8 x ø51 mm opening - 2 x ø12.5mm opening for thermometer
		8 * lid for ø 51 mm opening

Accessories for ASTM D2170:			
P/N	**Picture**	**TV2000**	**TV4000**
00T0908		Illuminator "Z41" backpanel (85~230V/50-60Hz)	
10T6090		Timer, 8 positions	
E20 Thermometer		Please see specification sheet "E20 thermometers"	
14T0303		Adapter to insert an E20 thermometer in the opening of the cover	
Cannon Fenske Opaque (CFO) viscometer, Zeitfuchs Cross Arm® viscometer (ZCA), BS/IP/RF viscometer		Please see specification sheet "Viscosity accessories".	
06T1724		Stopper for viscometer CFO/ZCA (pack of 12 pieces)	
25T1069		Special stopper for BS/IP/RF viscometer	
10T6071		Viscometer holder for Cannon Fenske Opaque	
10T6327		Viscometer holder for Zeitfuchs Cross Arm®	
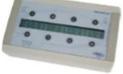
Accessories needed for ASTM D2170:			
P/N	**Picture**	**TV2000**	**TV4000**
10T6051		Viscometer holder for BS/IP/RF	
08T0001		Silicon oil, suitable from 20 to 150°C (1 can of 20L needed)	Silicon oil, suitable from 20 to 150°C (2 cans of 20L needed)
Reference standards		Please see specification sheet "Viscosity accessories".	

Bath options:			
P/N	**Picture**	**TV2000**	**TV4000**
07T0086		Level detector/float	
07T0087			Level detector/float
02T0203		Spill tray	
02T0201			Spill tray

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