

### Specifications TV12LT

Tamson visibility bath 15 litres, ASTM D445 - IP 71 - ISO 3104 - IP EM PJ - IEC 61868



- ⊕ **Small footprint**
- ⊕ **Detachable front window**
- ⊕ **Internal LED light**
- ⊕ **Ultra-high stability**
- ⊕ **RS232 communication**
- ⊕ **Bath drain**
- ⊕ **Built-in cooling -50°C / -58°F**
- ⊕ **4 places, small bath volume**
- ⊕ **Fast cool down to -20°C**

#### General

Tamson visibility baths are specially designed for tests that require ultra-precise temperature control, or processes that need to be followed visually, e.g. viscometry, thermometer and sensor calibration, density and reaction rate measurement, etc. The window is heated preventing built up of condensate. The TV12LT is specially designed for kinematic viscosity determination of aviation fuels. Please see table 3: "suggested set-up for determining the kinematic viscosity of aviation fuels". The TV12LT is able to cool down from ambient to -20°C (usual test temperature for aviation fuels) within 60 minutes.

#### Construction

The stainless steel construction ensures an exceptional stable bath temperature which is further improved by an ingenious stirring mechanism with baffle plates. All wetted parts are made of stainless steel and brass, providing resistance against all usual bath fluids. The cover of the bath has four round  $\varnothing 51$  mm openings with lids, for suspending glass capillary viscometers in holders.

Item	Unit	TV12LT		
		-42..+20°C -43.6..+68°F	-42..+80°C -43.6..+176°F	-50*..+20°C -58..+68°F
P/N 230V/50Hz		00T0410	00T0425	00T0470
P/N 115V/60Hz		00T0415	00T0430	00T0475
P/N 230V/60Hz		00T0420	00T0435	00T0480
Reading	°C or °F	Menu selectable		
Interface		RS232		
Setting	[°C]	0.01		
Stability **	[°C]	stdev 0.004, min/max $\pm$ 0.014		
Uniformity **	[°C]	stdev 0.004, min/max $\pm$ 0.013		
Heating	[W]	500 +700		
Heaters		2		
Bath volume	[L]	15		
Cover		1 cover with 4 x $\varnothing 51$ mm openings		
Window	[mm]	255 x 230		
Opening bath	[mm]	250 x 98		
Depth	[mm]	300		
Length	[mm]	670		
Width	[mm]	425		
Height	[mm]	720		
Power	[Watt]	Nominal 800, Maximum 2100		
Ambient condition	[°C]	18 .. 23		
CE		All models conform to CE regulations		
* $\pm$ 2°C production variation P/N 00T0470, P/N 00T0475 and P/N 00T0480				
** Measured @ -20°C in methanol				

The bath is fitted with adjustable feet for leveling. Different covers can be used. The use of thermo insulated windows and window heating ensures clean sight. A permanent LED light is located in the top plate to supply clear light and guarantees optimal visibility inside the bath. A bath overflow outlet protects against expanding bath fluid or when the bath filling is too high.

#### Agitation

A vane type stirrer with maintenance free bearings moves the bath fluid past a special heater ensuring optimal control temperature and excellent uniformity. A baffle plate directs the fluid resulting in excellent temperature control and homogeneity.

#### Fine adjustment and offset

After the bath has become stable, the set point may be more accurately adjusted in the range of  $-5.00^\circ$  to  $+5.00^\circ$ , if necessary. The absolute temperature can be adjusted with 0.005°C accuracy.

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#### Span

Varies for different part numbers. Span lies from -50°C/-58°F up to + 80°C/176°F.

#### Safety

The bath conforms to CE-regulation. Further the bath is equipped with a mechanical over temperature device which trips when in case of malfunction the bath exceeds the pre-set maximum temperature. This feature guarantees safe around the clock operation.

#### Accuracy

Recovery from temperature dip

TV12LT bath



Conventional rectangle bath



Inside glass viscometer capillary



#### Accuracy @ -20°C

Methanol

standard deviation  $\pm 0.004^\circ\text{C}$   
min / max  $\pm 0.013^\circ\text{C}$



#### Homogeneity

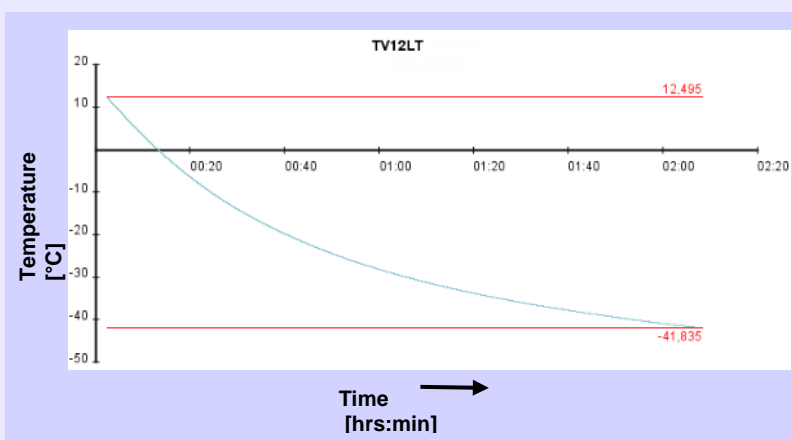
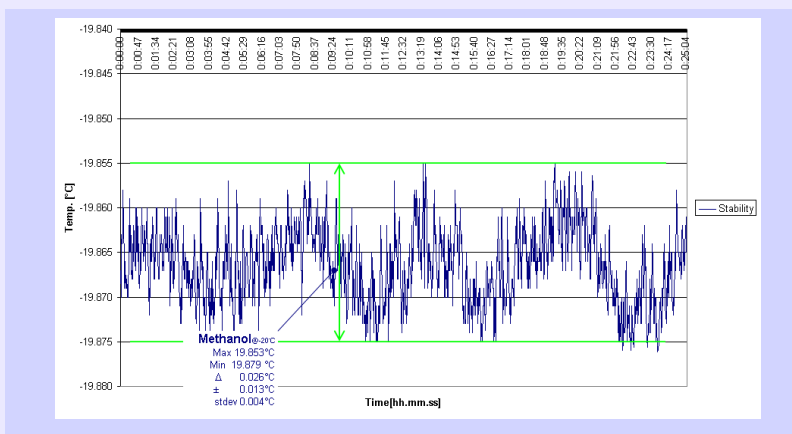
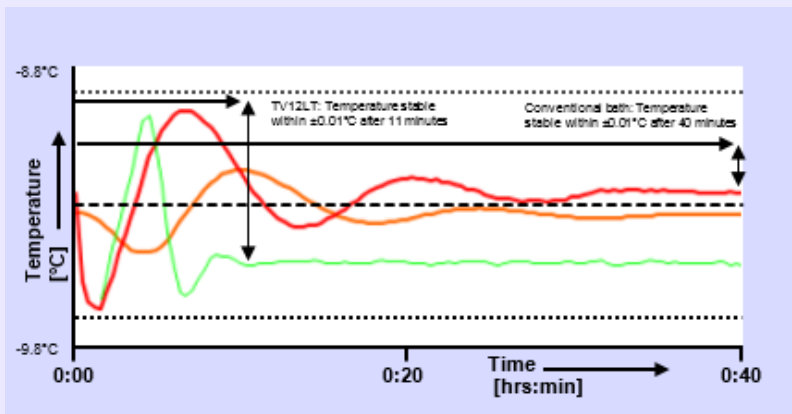
Methanol

standard deviation  $\pm 0.004^\circ\text{C}$   
min / max  $\pm 0.013^\circ\text{C}$

#### Cooldown

Reaches -20°C within 60 minutes

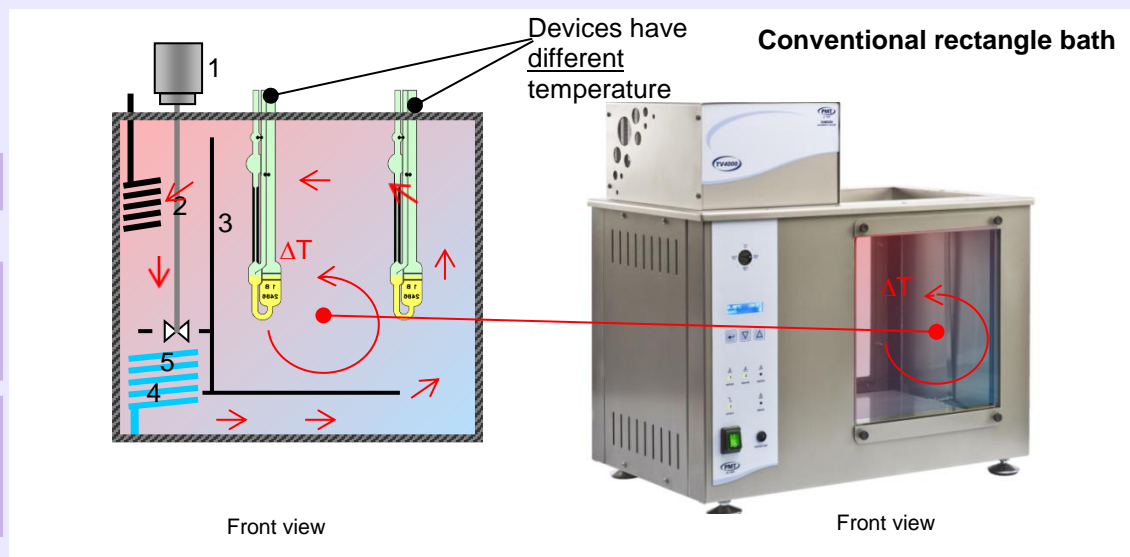
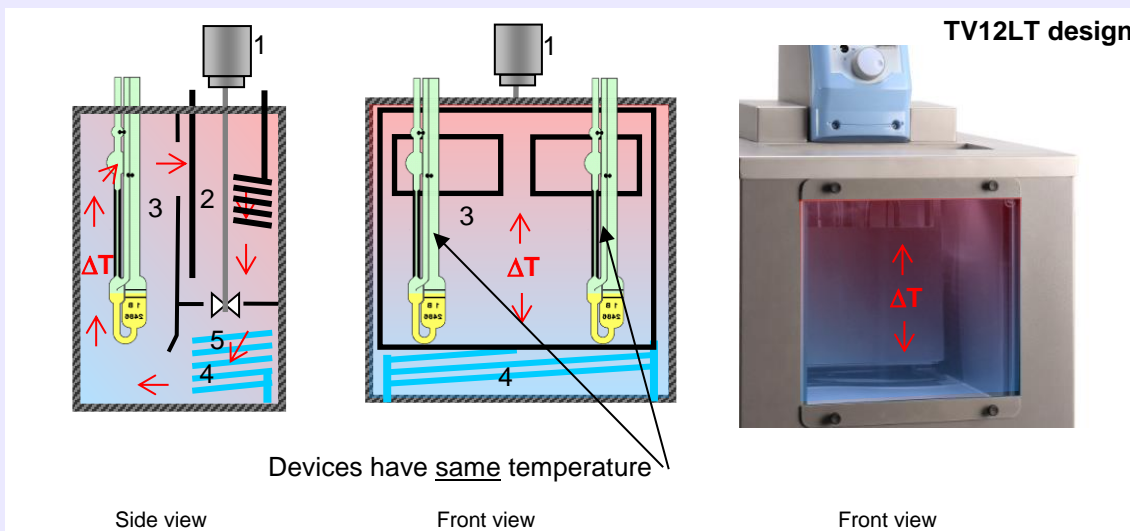
Reaches -40°C within 120 minutes



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Principle of operation

#### Superior homogeneity



- 1 : Motor
- 2 : Heater
- 3 : Baffle plate
- 4 : Cooling
- 5 : Stirrer vane

TV12LT

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Accessories

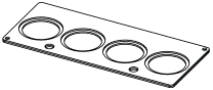

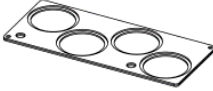

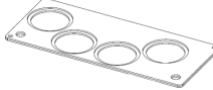


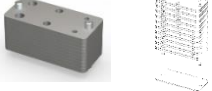








Table 1: TV12LT is standard included with:		
P/N	Picture	Description
23T2411		Cover with 4 openings: - 4 x $\varnothing$ 51 mm opening - 2 x $\varnothing$ 12.5mm opening for thermometer
		4 * lid for $\varnothing$ 51 mm opening

Table 2: Optional covers and levelling platform for TV12LT:		
P/N	Picture	Description
23T2413		Cover with 4 openings: - 4 x $\varnothing$ 60 mm opening - 2 x $\varnothing$ 12.5mm opening for thermometer
		4 * lid for $\varnothing$ 60 mm opening
23T2412		Special cover for CFR (Cannon Fenske Routine) viscometers with 4 openings: - 4 x $\varnothing$ 51 mm opening - 2 x $\varnothing$ 12.5mm opening for thermometer
		4 * lid for $\varnothing$ 51 mm opening
13T6200		Levelling platform - without metal block (P/N 13T6210) - openings in cover can be custom designed (Please see page 6 for more information)
13T6210		Metal calibration block (Please see page 6 for more information)

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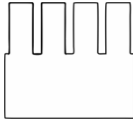
Aviation Fuel Viscosity

**Table 3: Suggested set-up to determine the kinematic viscosity of aviation fuel**

P/N	Picture	Suggested quantity	Description
00T0410		1	TV12LT (230V/50Hz)
00T0415			TV12LT (115V/60Hz)
00T0420			TV12LT (230V/60Hz)
10T6090		1	Timer, 8 positions
14T0303		1	Adapter to insert E20 thermometer in to the bath cover
19T4024		1	E20 thermometer Resolution 0.01 (two decimals) accuracy $\pm 0.02^{\circ}\text{C}$ (Range $-40^{\circ}\text{C}$ to $+140^{\circ}\text{C}$ )
10T6001		4	Ubbelohde viscometer holder
25T0814		1	ISO 17025 Calibrated Ubbelohde viscometer tube size 0C
25T0816		1	ISO 17025 Calibrated Ubbelohde viscometer tube size 0B
25T0817		1	ISO 17025 Calibrated Ubbelohde viscometer tube size 1
25T0818		1	ISO 17025 Calibrated Ubbelohde viscometer tube size 1C
N2B		1	N2B viscosity reference standard
06T1724		1	Stoppers

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#### Accessories

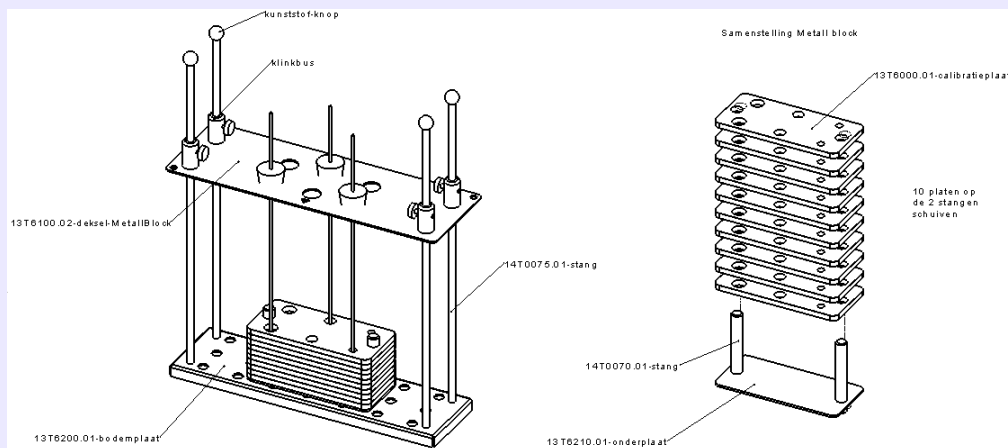
Table 4: Accessories and options		
<b>Viscosity accessories</b>		Please see specification sheet "Viscosity accessories", e.g. viscometers, viscometer holders, bath fluids, general purpose reference standards, etc
<b>02T0204</b>		Spill tray Protects your lab against dripping and spilling during operation or when replacing bath fluid. The tray has a drainage valve 3/8" BSP connection.
<b>07T0085</b>		Level detector/float
<b>13T3021</b>		White contrast plate to get better visibility when measuring transparent liquids like jet fuel

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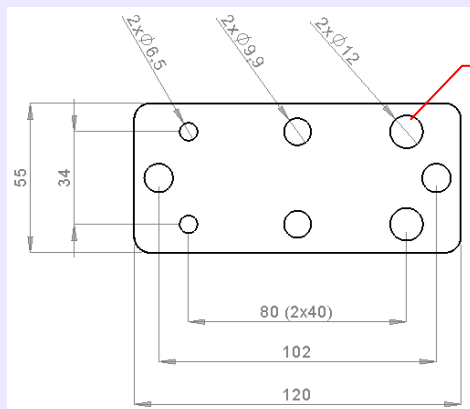
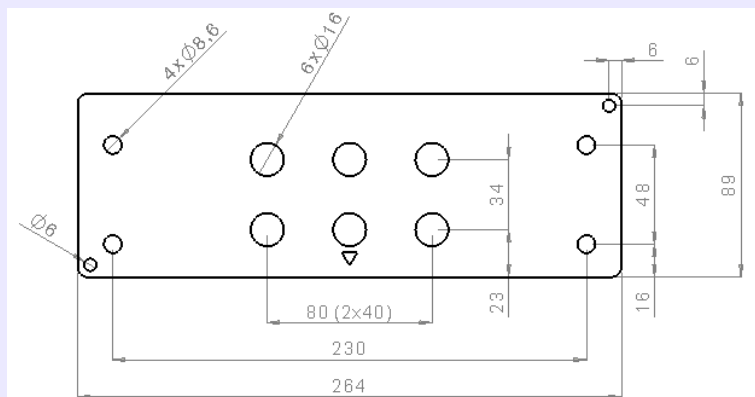
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#### Accessories

#### Levelling platform (P/N 13T6200) and metal block (P/N 13T6210)



#### Dimensions top plate



☞ Number of holes, dimensions and position Other dimensions on request ☞

TV12LT