

Specifications TV2000MKII, TV4000MKII, TV7000DC

ASTM D445 - ASTM D446 - IP 71 - ISO/EN 3104 - ASTM D2170 - ASTM D2162



- Completely stainless steel**
- Conforms to ASTM D445**
- High precision stability**
- Large windows**
- Easy to operate**
- RS232 communication**
- Drain and overflow outlet**

General

Tamson viscometer and Tamson calibration baths are specially designed for tests that require ultra-precise temperature control, or processes that need to be followed visually, e.g. viscometry, thermometer calibration, crystal growing, density and reaction rate measurement, etc. All models are fitted with double windows in front and rear walls. Visibility through the bath is excellent.

Construction

The stainless steel construction with 25 mm thick rock wool insulation ensures an exceptionally stable bath temperature which is further improved by an ingenious stirring mechanism with baffle plates. All wetted parts are made from stainless steel, providing resistance against all usual bath fluids. The bath is fitted with adjustable feet for levelling. 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 below ambient, use of cooling must be made. A cold flow can be pumped through the cooling coil inside the apparatus.

| Item | Unit | TV2000 MKII | TV4000 MKII | TV7000DC |
|---------------------|------|----------------------------------------------|-------------------------|-------------------------|
| P/N 230V/50~60Hz | | 00T0782 | 00T0772 | 00T0796 |
| P/N 115V/60Hz | | 00T0784 | 00T0774 | 00T0798 |
| Range | [°C] | Ambient to 230C/446F | Ambient to 230C/446F | Ambient to 180C/356F |
| Reading | | °C or °F menu selectable | | |
| Readout | | Two decimals (0.01). Three decimals optional | | |
| Interface | | RS232 | | |
| Setting ± | [°C] | 0.01 | | |
| Stability* ± | [°C] | 0.01 | | |
| Uniformity* ± | [°C] | 0.01 | | |
| Heating 230V | [kW] | 2.8 | 2.8 | 2.4 |
| Heating 115V | [kW] | 1.75 | 1.75 | 1.5 |
| Heaters | | 2 | 2 | 3 |
| Bath volume | [L] | 20 | 40 | 70 |
| Number of lids | | 3 | 4+3 or 4+4 | 4+3 or 4+4 |
| Opening lid | [mm] | ø51 | ø51 | ø51 |
| Window | [mm] | 140 * 285 | 270 * 285 | 270 * 585 |
| Opening bath | [mm] | 130 * 165 | 260 * 240 | 260 * 240 |
| Depth | [mm] | 300 | 300 | 630 |
| Length | [mm] | 350 | 400 | 460 |
| Width | [mm] | 470 | 590 | 410 |
| Height | [mm] | 590 | 590 | 1010 |
| Weight | [kg] | 40 | 41 | 61 |
| Power 230V | [kW] | 2.9 | 2.9 | 2.6 |
| Power 115V | [kW] | 1.8 | 1.8 | 1.6 |
| Frequency | [Hz] | | Suited for both 50 & 60 | |
| CE | | All models conform CE regulation | | |

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

Tap water or a combination with the external Tamson TLC15-5 cooling circulator can 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 air space. A power plug on the backside is mounted to provide power for an optional Z41 or Z71 LED illumination unit to provide a better view inside the bath.

Agitation

A vane type stirrer with brass bearings moves the bath fluid past the heaters and then from under the main baffle plate, thus directing the freshly heated bath fluid to the walls as well as window areas and is creating an optimal temperature uniformity inside the bath.

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Span

TV2000MKII & TV4000MKII can be operated from ambient +5°C up to +230°C/446°F and TV7000DC up to +180°C/356°F. With the use of the built-in cooling coil, span lies 5°C above the temperature of the cooling liquid.

Accuracy and set point

The set point can be set in steps of 0.01°. The system overall accuracy is within $\pm 0.01^\circ\text{C}$. Please see the graphs for more details. After the temperature control is stable, the offset can even be adjusted with $\pm 0.005^\circ\text{C}$.

Viscometer arrangement

The TV4000MKII and TV7000DC stainless steel bath cover has seven openings with lids, arranged in two rows of resp. four and three openings. An optional cover with eight openings or eleven openings is also available. The TV2000MKII offers three openings (2 + 1 lids). These openings of $\varnothing 51$ mm will accommodate glass capillary in holders (please see our specification sheet "viscosity accessories"). Additionally, separate thermometers can be placed through two $\varnothing 12.5$ mm openings in the cover. Other lids are optional, please see the tables on pages 3 & 4.

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,
- System accuracy.

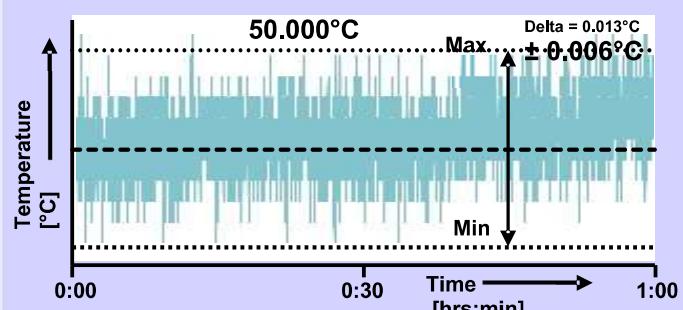
System error results in total cut-off from the power supply.

The viscosity baths are standard equipped with a float. In case the level of the bath fluid is too low, the float will switch-off the bath.

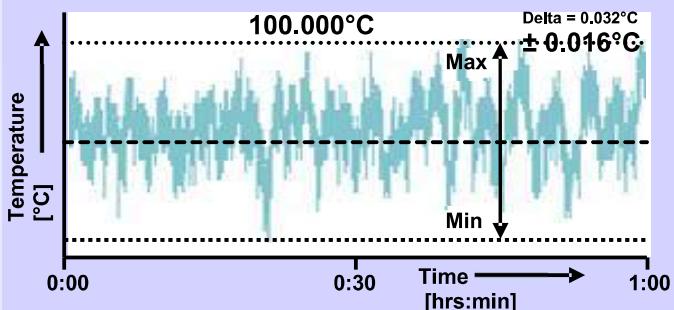
Optional equipment

See next page.

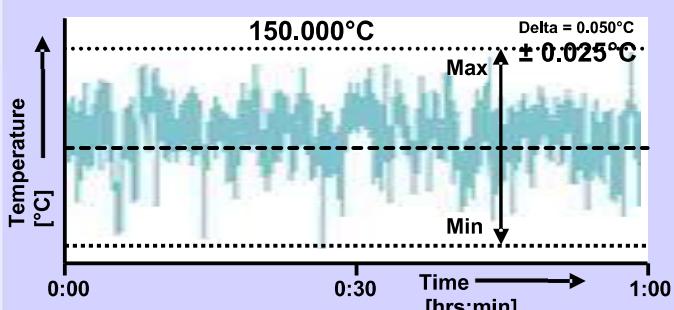
Temperature stability @ 50°C



Temperature stability @ 100°C



Temperature stability @ 150°C



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| TV2000MKII 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 covers for TV2000MKII: | | |
|---------------------------------|---------|-----------------------------------------------------------------------------------------|
| 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 |
| 23T2406 | | Cover with 3 openings: - 3 x ø60 mm opening - 2 x ø12.5mm opening for thermometer |
| | | 3 * lid for ø 60 mm opening |

| TV4000MKII or TV7000DC 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 |

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| Optional covers for TV4000MKII or TV7000DC: | | |
|---------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------|
| 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 |
| 23T2402 | | Cover with 8 openings: - 8 x ø60 mm opening - 2 x ø12.5mm opening for thermometer |
| | | 8 * lid for ø 60 mm opening |
| 23T2418 | | Cover with 11 openings: - 11 x ø51 mm opening - 2 x ø12.5mm opening for thermometer |
| | | 11 * lid for ø 51 mm opening |
| 23T2403 | | Cover with 7 openings: - 4 x ø51 mm opening - 3 x ø60 mm opening - 2 x ø12.5mm opening for thermometer |
| | | 4 * lid for ø 51 mm opening |
| | | 3 * lid for ø 60 mm opening |

TV Service



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| Accessories | | | | |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------------------------------|
| P/N | Picture | TV2000MKII | TV4000MKII | TV7000DC |
| 00T0909 |   | Illuminator "Z41" stand alone (85 ~ 230V/50-60Hz) | | |
| 00T0908 |   | Illuminator "Z41" backpanel (85 ~ 230V/50-60Hz) | | |
| 00T0907 |   | | | Illuminator "Z71" backpanel (85 ~ 230V/ 50-60Hz) |
| 00T0565 |  | Cooling circulator TLC15-5 - 230V/50Hz | | |
| 00T0567 | | Cooling circulator TLC15-5 - 230V/60Hz | | |
| 00T0570 | | Cooling circulator TLC15-5 - 115V/60Hz | | |
| 10T6090 |  | Timer, 8 positions | | |
| 10T6094 |  | Tamson TT3B thermometer with external probe, three decimal reading, precision $\pm 0.02^\circ\text{C}$, short PT-100 probe with range -40 .. +140°C including a works calibration certificate. (Please see specification sheet "TT3B thermometer") | | |
| 14T0303 |  | Adapter to insert a TT3B thermometer in the opening of the cover | | |
| 02T3041 | | Three decimal readout (0.001) | | |
| Viscosity accessories |  | Please see specification sheet "Viscosity accessories", e.g. viscometers, viscometer holders, bath fluids, general purpose reference standards, etc. | | |

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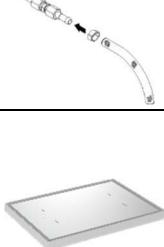
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| Accessories | | | | |
|-------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------|------------|
| P/N | Picture | TV2000MKII | TV4000MKII | TV7000DC |
| 00T0944 |  | | Tamson Manifold Kinematic Viscosity (TMKV) | |
| 00T0233 |  | Vacuum pump 230V/50-60Hz | | |
| 00T0261 | | Vacuum pump 115V/60Hz | | |
| 12T1075 |  | Tubing with connectors and clamps to be used between a TLC and a TV | | |
| 02T0203 |  | Spill tray | | |
| 02T0201 | | | | Spill tray |

TV4000MKII with TMKV (P/N 00T0944) and Vacuum pump to be used with the following viscometers:

- Ubbelohde
- BS/U-tube
- BS/U/M miniature
- SIL
- BS/IP/SL(S)
- BS/IP/MSL



TV Series