“True knowledge is rigorous and hard on itself. At the same time is amiable and tolerant.”

Plutarco
Laboratory fume cupboards “VG-BS”
FOR STEAM, ACIDS, BASES AND SOLVENTS EXTRACTING.

SAFETY: DESIGNED AND BUILT MEETING EUROPEAN STANDARD UNE-EN 14175-2

COMMON FEATURES
Antiacid continuous ceramic worktop with anti-dumping peripheral rim and evacuation sink.
Inner working chamber built in thermo stable compact resins, antiacids and anti-moisture. M1 fire resistance.
Extraction system with perfectly balanced injected polypropylene turbine. Coupled and protected engine outside the fumes way.
Vertical guillotine door with adjustable height in any position and three sections of 3 + 3mm laminated glass slide which creates a high resistance protection shield.
Self-supporting structure, made of structural elements with 2 mm steel tube, degreased, phosphated and coated with a 70 μ layer of epoxy paint vitrified in the oven. This structure is completely isolated from the working cabin and from the gases contact.
External cover in white melamine board or thermo stable resins in high humidity environments.

ASSEMBLY SYSTEM INTO TWO BODIES
Upper body with cabinet and embedded extractor.
Lower body with a structure, ceramic worktop and remote control panel for fluids and gases in an horizontal housing.
Optional: working system (Walking) at ground level for the input and working with machinery, reactors and organic synthesis appliances. (Request information).

TECHNICAL FEATURES
Lighting level: More than 500 Lux in working area IP 55 or ATEX*.
Extraction volume: from 420 to 4,500 m3/h.
Engines: from 0,75 to 2 CV - IP55 or ATEX*.
*ATEX: if we work with flammable, solvents or hydrocarbons.
On request: Automatic control unit for variable flow (motor) depending on door’s opening.
Failure alarm.
On request: Perimeter and ceiling in continuous tiles, for working with sulfuric acid.
On request: Perimeter and ceiling in continuous tiles, for working with perchloric acid. It comes with gas washing.

CONTROL PANEL
ON / OFF push button with green LED and electrical sockets 230V/16A.
Fuel regulator knob (Yellow).
Nitrogen regulator knob (Blue/ green button).
Vacuum regulator knob (Grey/ black button).
Air regulator knob (Blue/ yellow button).
Water regulator knob (Green/ blue button)
Safety locking pin on door for recommended working position.

MODELS

<table>
<thead>
<tr>
<th>MODELS</th>
<th>Part No.</th>
<th>Height / Weight / Depth</th>
<th>Lower body (inner) cm</th>
<th>Height / Weight / Depth</th>
<th>Lower body (inner) cm</th>
<th>Height / Weight / Depth</th>
<th>Lower body (inner) cm</th>
<th>Weight Kg</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>VG-BS-1200</td>
<td>5001613</td>
<td>170 122 90</td>
<td>90 122 90</td>
<td>120 96 62</td>
<td>72 96 55</td>
<td>124 96 84</td>
<td>120 96 62</td>
<td>124</td>
<td>84</td>
</tr>
<tr>
<td>VG-BS-1420</td>
<td>5001614</td>
<td>170 142 90</td>
<td>90 142 90</td>
<td>120 116 62</td>
<td>72 116 55</td>
<td>162 116 116</td>
<td>120 116 62</td>
<td>162</td>
<td>116</td>
</tr>
<tr>
<td>VG-BS-1720</td>
<td>5001615</td>
<td>170 172 90</td>
<td>90 172 90</td>
<td>120 146 62</td>
<td>72 146 55</td>
<td>200 146 148</td>
<td>120 146 62</td>
<td>200</td>
<td>148</td>
</tr>
<tr>
<td>VG-BS-2002</td>
<td>5001616</td>
<td>170 202 90</td>
<td>90 202 90</td>
<td>120 176 62</td>
<td>72 176 55</td>
<td>238 176 180</td>
<td>120 176 62</td>
<td>238</td>
<td>180</td>
</tr>
</tbody>
</table>

ACCESSORIES

<table>
<thead>
<tr>
<th>PVC Tubes</th>
<th>PVC Elbow joint</th>
<th>Safety cabinets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part No.</td>
<td>Ø / Length cm</td>
<td>Part No.  Ø / Degrees</td>
</tr>
<tr>
<td>5001617</td>
<td>20 200</td>
<td>5001621 20 45º</td>
</tr>
<tr>
<td>5001618</td>
<td>25 200</td>
<td>5001622 25 45º</td>
</tr>
<tr>
<td>5001619</td>
<td>20 100</td>
<td>5001623 20 90º</td>
</tr>
<tr>
<td>5001620</td>
<td>25 100</td>
<td>5001624 25 90º</td>
</tr>
</tbody>
</table>
Vertical laminar flow cabinets “H-1” and “H-2”

**TFT TOUCH SCREEN**

**CLASS 1**

**SAFETY:**

US STANDARD ST 209 (CLASS 100)
EUROPEAN STANDARD ISO 14644 (CLASS 5) HEPA FILTER (HIGH EFFICIENCY PARTICULATE AIR)

**APPLICATIONS**

Water quality control, laboratories and food industries, pharmacies services, haematology and clinical analysis, drug-injecting antibiotics, microscopic analysis, assisted fertilization, cell cultures, etc...

**FEATURES**

Lower setting made of PMMA transparent methacrylate.
Working surface made of stainless steel AISI 304.
Ultraviolet lamp.
Metallic parts coated with protective polymerization.
Extraction system with silent turbine.
Operating hours counter for HEPA filter replacement.

**TECHNICAL SPECIFICATIONS**

Illumination level (W-Lux): 500.
Airflow speed (M/S): 0.7 - 1.0.
Noise level (dB): < 67.
Power supply (V-Hz): 220/50.
HEPA filter class H14: 99.999% efficiency for particles of 0.5 microns. Working temperature in ºC: between 15 and 35.

**CONTROL PANEL**

TFT touch screen
Stop/start push button.
Light push button.
Sterilization push button.
Ventilation push button.
Operating hours counter push button.

**MODELS**

<table>
<thead>
<tr>
<th>Models</th>
<th>Part No.</th>
<th>Height / Width / Depth (exterior) cm</th>
<th>Height / Width / Depth (interior) cm</th>
<th>Fluorescent Lamp (W)</th>
<th>UV lamp W</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>560951</td>
<td>55 46 78</td>
<td>54 38 40</td>
<td>15x1</td>
<td>15x1</td>
<td>150</td>
<td>40</td>
</tr>
<tr>
<td>H2</td>
<td>5609510</td>
<td>70 55 90</td>
<td>68 45 50</td>
<td>18x1</td>
<td>18x1</td>
<td>160</td>
<td>60</td>
</tr>
</tbody>
</table>

**ACCESSORIES**

**FOR MODEL**

<table>
<thead>
<tr>
<th>Supporting tables for cabinets</th>
<th>Part No.</th>
<th>Height / Width / Depth (exterior) cm</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>5609512</td>
<td>78 55 47</td>
<td>5</td>
</tr>
<tr>
<td>H2</td>
<td>5609513</td>
<td>78 70 55</td>
<td>8</td>
</tr>
</tbody>
</table>

**Shoe soles coater “ZA-1”**

**AUTOMATIC.**

**DIGITAL TEMPERATURE CONTROL OF AIR.**

**FEATURES**

Shoe soles coated with a PVC film.
It cuts the film by thermal contraction providing hot air with temperature control.
Different sizes shoes coated in seconds.
It saves on consumables. A roll of film can be coated up to 1000 shoes.
According with CE and ROHS regulations. Consumables 100% recyclable.

**MODEL**

<table>
<thead>
<tr>
<th>Model</th>
<th>Part No.</th>
<th>Dimensions cm</th>
<th>Voltage</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5000051</td>
<td>33 45 80</td>
<td>220V-50Hz</td>
<td>1300</td>
<td>27</td>
</tr>
</tbody>
</table>

**SPARE PARTS**

PVC coil for 1000 coatings.
Part No. 5000052
INTRODUCTION

Rheology is the study of the effects experimented in a substance when a mechanical force is applied on it (flow and deformation) under different external conditions. It is used to describe the consistency of different products and is normally defined by the components: viscosity and elasticity.

Measuring viscosity is determined by the tangible force required to displace the materials particles with a specific deformation-flow i.e. velocity. The relationship between the tangible force and the deformation flow obtains the viscosity result. Ambient conditions such as temperature and pressure also have an effect on viscosity. The measurement of viscosity is not just limited to the research laboratory, it has progressively entered the field of industrial quality control.

PRINCIPLES OF VISCOSITY

These instruments operate by means of a cylinder or disk (spindle) that is submerged into the material to be analysed and by measuring the resistance of the substance at a selected known speed. This resistance results is the measurement of the viscosity according to the flow characteristics of the reference spindle; the instrument calculates the result and directly displays the viscosity that is reported in cP (CGS) or mPa-s (SI).

A wide range of viscosity can be measured using viscometers that are equipped with different types of spindles and speed ranges. The design of the spindles and the principals of measurement principles are regulated by ISO 2555 and ISO 1652 standards. All spindles are made of AISI 316 stainless steel. Each spindle can be identified by a letter and a number.

SELECTION TABLE

| Standard measuring range of the viscometers, without additional accessories |
|-----------------|-----------------|
| Part no          | 1001616          |
| Model            | ST-2020 L        |
| Units            | centiPoise (cP)  |
| Standard spindle | L1 to L4         |
| Speed range      | 1 to 60          |
| Measuring range  | 20 to 600,000 cP |
| Temperature range| 0.0 a 100.0      |
| Power requirement| 115/230V to 12VDC |
| Weight           | 5 Kg             |

FEATURES

L.C.D. display of parameters and results:
- Selected speed............. r.p.m.
- Selected spindle.............. S.P.
- Viscosity result........... cP (mPa-s) or cSt.
- Base scale percentage............. %
- Sample temperature:........... °C or ° F.

Auto alarm in the case of any fault being detected.
Off scale detection and indication by an audible and visual signal.
Step controlled speed to prevent spindle vibrations.
Velocity from 0.1 to 100 r.p.m.
Mains power surge protection.
RS 232 unidirectional interface, download to a computer.

TECHNICAL DATA

Precision: ±1% base scale.
Repeatability: 0.2%.
Supplied complete with:
- Anti shock carry case.
- Main unit.
- Support base.
- Spindle protector.
- Spindle support.
- Set of spindles (model dependant)
- Temperature prove.

DIGITAL THERMOMETER

Temp range: - from 0.0 °C to + 100.0 °C (+ 32.0 °F to + 212.0 °F).
- Resolution: 0.1 °C (0.1722 °F).
- Precision: ± 0.1 °C.

ACCESSORIES

Standard spindles for L model.
L1 Part No. 1000998
L2 Part No. 1000999
L3 Part No. 1001000
L4 Part No. 1001001

Standard spindles for R model.
R1 Part No. 1000995 (for low viscosity samples)
R2 Part No. 1001030
R3 Part No. 1001031
R4 Part No. 1001032
R5 Part No. 1001033
R6 Part No. 1001034
R7 Part No. 1001035

Rack of standard spindles L1, L2, L3, L4: Suitable for models L.
Rack of standard spindles R2, R3, R4, R5, R6 and R7: Suitable for model R.
MODELS

<table>
<thead>
<tr>
<th>Models</th>
<th>Part No.</th>
<th>Measuring range</th>
<th>Standard spindles</th>
<th>Power requirement</th>
<th>Power (W)</th>
<th>Weight (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STS-2011 L</td>
<td>1001611</td>
<td>20 to 2,000,000 cP</td>
<td>L1, L2, L3, L4</td>
<td>100-240 V 50/60 Hz</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>STS-2011 R</td>
<td>1001612</td>
<td>100 to 13,000,000 cP</td>
<td>R2, R3, R4, R5, R6, R7</td>
<td>100-240 V 50/60 Hz</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>STS-2011 H</td>
<td>1001613</td>
<td>200 to 106,000,000 cP</td>
<td>R2, R3, R4, R5, R6, R7</td>
<td>100-240 V 50/60 Hz</td>
<td>15</td>
<td>5</td>
</tr>
</tbody>
</table>

FEATURES

10 different options of language.
L.C.D. display of parameters and results.
Parameters display:
- Selected speed r.p.m.
- Selected spindle
- Viscosity result cP (mPa-s) or cSt.
- Base scale percentage %.
- Sample temperature °C or °F.
- Deformation ratio (with special spindle)
- Torsion force (with special spindles)
- Density (input by the user) g/cm³.
This instrument determines both relative and absolute viscosity.
Data can be changed between S.I. and C.G.S.
Automatically checks for correct operation point by scanning at different speeds.
Auto alarm in the case of any fault being detected.
Off scale detection and indication by an audible and visual signal.
Step controlled speed to prevent spindle vibrations.
Calibration by the user himself.
18 preselected speeds from 0.3 to 100 r.p.m.
The operator can select any speed within this range.
USB port.

ACCESSORIES

Standard spindles for L model.
- L1 Part No. 1001036
- L2 Part No. 1001037
- L3 Part No. 1001038
- L4 Part No. 1001039

Standard spindles for R and H model.
- R1 Part No. 1000990 (for low viscosity samples)
- R2 Part No. 1001070
- R3 Part No. 1001071
- R4 Part No. 1001072
- R5 Part No. 1001073
- R6 Part No. 1001074
- R7 Part No. 1001075

Small sample volume adapters (APM).
Suitable for sample volumes from 8 to 13 ml.
Requires the “TL” or “TR” set of spindles.
Unit suitable for temperatures from 0 °C to +100 °C.
Part No. 1000986 Small sample adapter APM with water jacket.
Part No. 1001623 Temperature sensor suitable for APM.

Low viscosity adapters. (LCP).
Required if low viscosity measurements are necessary.
Reproducible results and measurements of viscosity from 1 cP.
Suitable for models L and R.
Sample volume: 16 to 18 ml.
Includes special spindle LCP.
Part No. 1000985. Adapter LCP with water jacket.
Part No. 1001624 Temperature sensor suitable for LCP.

Displacement spiral helix adapter.
Required for low fluidity samples.
Part No. 1000988

PARTS

Part No. 1000985
Part No. 1000986
Part No. 1000988
Temperature control equipment for viscosity measurements for viscometers “ST-2020” and “STS-2011”

The influence of temperature while measuring viscosity is considerable, lower temperatures increase viscosity. Therefore it is indispensable to control temperature when precise viscosity measurements are required. The control of temperature by using a thermostatically controlled bath is the most efficient, because of the recirculation of liquid produces a rapid and stable temperature.

We recommend our range of immersion thermostats for this application.

TEMPERATURE CONTROL AND CONFIGURATION FOR VISCOSITY MEASUREMENTS:
FRIGITERM-TFT-10 Part No. 3000546, FRIGTERM-TFT-30 Part No. 3000547
Suitable for below ambient working environments (see page 103 for specifications).

For temperatures above ambient see the DIGITERM-S-150 Part No. 3000543, or DIGITEM-TFT-200 Part No. 3000544 complete with 12 litre tank Part No. 6000391, (see pages 101 and 102 for specifications).

An adapter kit for the thermostat bath is required:
Part No. 1001625 for STS-2021
Part No. 1001626 for ST-2020
Adapter for thermostat bath comprising of an extension spindle and 4 leg adjusters for the bath. (Kit can be fitted by the user.)
This kit adjusts the bath measuring height to enable samples to be placed inside.
Part No. 1001627. Support for 2 500 ml beakers, to be placed inside the bath.
Part No. 1001628 Support base for the DIGITERM immersion thermostats. This accessory is recommended to close the bath and maintain a constant temperature.

CONSTANT TEMPERATURE CONTROL ACCESSORY FOR SMALL SAMPLE VOLUME ADAPTERS. USE WITH THE RE-CIRCULATING JACKET ACCESSORIES. PART NO. 1000996
To work below ambient temperatures, we recommend the use of the FRIGITERM-TFT-10 Part No. 3000546, or FRIGTERM-TFT-30 Part No. 3000547 (see page 103 for specifications.)

For temperatures above ambient see the DIGITERM-S-150 Part No. 3000543, or DIGITEM-TFT-200 Part No. 3000544 complete with 12 litre tank Part No. 6000391, (see pages 101 and 102 for specifications).

It is necessary to configure the immersion thermostats for “external re-circulation.”
The Bath adapter kit is not required.

Rotary Viscometer “NDJ-1”

APPLICATIONS
The instrument operates by rotating a disk or cylinder, (spindle), that is submerged in the liquid or fluid to be analysed. A pre-selected speed is set, the unit measures the absolute resistance from viscosity of the fluid being analysed. Suitable for samples such as: foods, cosmetics, fats and oils, pharmaceutical products, paints and plastics, etc.

FEATURES
The asynchronous motor is connected to a graduated disk with 4 different speeds that propel the spindle via a spiral and die.
Supplied complete with a set of 4 spindles in a box, numbered 1 to 4 with spindle stand.
The viscometer includes a level and adjustable screw feet support base and protective case.

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Part No.</th>
<th>Measuring range</th>
<th>Tolerance</th>
<th>Spindle Speed r.p.m. for 1 to 4</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDJ-1</td>
<td>5120230</td>
<td>10-100,000 mPaS</td>
<td>±5% Liquid Newtons</td>
<td>6 - 12 - 30 - 60</td>
<td>15</td>
<td>6</td>
</tr>
</tbody>
</table>

Viscometers
Flow cups for measuring liquid viscosity

CUP Nº 4 STANDARD DIN 53211.
CUPS STANDARD ISO 2431.
CUP FORD STANDARD ASTM D-1200.
CAPACITY: 100 ML.

FEATURES
Suitable for measuring kinematic viscosities from 5 to 700 cSt, model dependent.
Metallic cups, chrome finished and calibrated.

FLOW CUPS FOR MEASURING LIQUID VISCOSITY

CAPACITIES: 100 ML.

FEATURES
- Suitable for measuring kinematic viscosities from 5 to 700 cSt, model dependent.
- Metallic cups, chrome finished and calibrated.

MODELS

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Standard/Bore Ø mm</th>
<th>Format</th>
<th>Range cSt fall times</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000123</td>
<td>DIN 53211 4</td>
<td>Standard</td>
<td>90 to 700 25” to 100”</td>
</tr>
<tr>
<td>7001239</td>
<td>DIN 53211 4</td>
<td>Heated</td>
<td>90 to 700 25” to 100”</td>
</tr>
<tr>
<td>1000347</td>
<td>DIN 53211 4</td>
<td>With handle</td>
<td>90 to 700 25” to 100”</td>
</tr>
<tr>
<td>1001013</td>
<td>ISO 2431 3</td>
<td>Standard</td>
<td>5 to 42 30” to 100”</td>
</tr>
<tr>
<td>7001017</td>
<td>ISO 2431 3</td>
<td>Heated</td>
<td>5 to 42 30” to 100”</td>
</tr>
<tr>
<td>1001014</td>
<td>ISO 2431 4</td>
<td>Standard</td>
<td>35 to 135 30” to 100”</td>
</tr>
<tr>
<td>7001018</td>
<td>ISO 2431 4</td>
<td>Heated</td>
<td>35 to 135 30” to 100”</td>
</tr>
<tr>
<td>1001015</td>
<td>ISO 2431 5</td>
<td>Standard</td>
<td>100 to 350 30” to 100”</td>
</tr>
<tr>
<td>7001019</td>
<td>ISO 2431 5</td>
<td>Heated</td>
<td>100 to 350 30” to 100”</td>
</tr>
<tr>
<td>1001016</td>
<td>ISO 2431 6</td>
<td>Standard</td>
<td>190 to 680 30” to 100”</td>
</tr>
<tr>
<td>7001020</td>
<td>ISO 2431 6</td>
<td>Heated</td>
<td>190 to 680 30” to 100”</td>
</tr>
<tr>
<td>1000705</td>
<td>ASTM D-1200 3.40</td>
<td>Standard</td>
<td>40 to 220 20” to 100”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.12</td>
</tr>
<tr>
<td>7000706</td>
<td>ASTM D-1200 3.40</td>
<td>Heated</td>
<td>40 to 220 20” to 100”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.12</td>
</tr>
<tr>
<td>1000707</td>
<td>ASTM D-1200 3.40</td>
<td>With handle</td>
<td>40 to 220 20” to 100”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.12</td>
</tr>
</tbody>
</table>

ACCESSORIES
- Water bath with heater and screw on disk, with level. Part No. 7001022
- Temperature controller Electemp-TFT. Part No. 3000897
- Pt 100 sensor probe for the Electemp-TFT and water bath. Part No. 7001496
(See page 293).

ACCESSORY
Support stand with adjustable level.
Part No. 7001021

Comes with a calibration certificate with results traceable to known standards and equipment.

J.P. SELECTA, s.a.
CERTIFICADO DE CALIBRACIÓN
CALIBRATION RECORD

1. Identificación:
Parte utilizada: 1000500
Código de serie (Serie): 1002600
Descripción (Descripción): 1000500-1000501

2. Límites de la calibración:
Parte utilizada: 1002600
Lote (Lot number): 07510
Volumen ideal (Standard Volume): 40 mL

3. Resultados de la calibración:
- Temporío 1 (Temp time 1): 0.04 s
- Temporío 2 (Temp time 2): 0.06 s
- Media (Average): 0.05 s
- Viscosidad (Viscosity): 441.1 cSt
- Temperatura (Temperature): 23 ± 0.5 °C

4. Aceptación de la medida según la Norma:
4.1 Repetibilidad:
190/Tiempos 1 - Media y Medida: 1.4 % (Max 5%) Satisfactorio
190/Tiempos 2 - Media y Medida: 1.4 % (Max 5%) Satisfactorio

4.2 Error:
190/Media - Promedio: 1.5 % (Max 7%) Satisfactorio

Aprobado (Approved by)

Viscometers 289
**Viscometer Precision Bath “VB-1423”**

For controllable temperatures from amb.+5 °C to 100 °C.

Stability ±0.05 °C. Homogeneity ±0.05 °C. Reading error ±0.09 °C. Resolution 0.1 °C.

**Features**

Temperature sensor Pt100 thermo-resistor, stainless steel AISI 304 lid with three viscometer locations ports, three independent lids and an additional location port for the control thermometer. The main body of the bath is made of a 20 litre borosilicate glass tank. A white plate is located at the back to help optimise and read the viscometers.

**Control Panel**

1. Mains power illuminated switch.
2. Temperature regulator:
   3. Real time temperature display.
   4. Push button to increase value.
   5. Push button to decrease value.
   6. Push button to configure operation.
7. Safety thermostat safety lamp.

**Model**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Control range °C</th>
<th>Capacity litres</th>
<th>Height / Ø (tank) cm</th>
<th>Height / Ø (total) cm</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>3001423</td>
<td>amb.+5 up to 100</td>
<td>20</td>
<td>32</td>
<td>47</td>
<td>1000</td>
<td>8</td>
</tr>
</tbody>
</table>

**Accessories**

Universal viscometer support made from PTFE with stainless steel AISI 304 support. Suitable for the following viscometers:

- Cannon-Fenske for transparent liquids.
- Cannon-Fenske for opaque liquids.
- Ubbelohde.
- Ostwold.
- BS U Tube.
- Cannon-Manning semi-micro.
- Ubbelohde type BS/IP/SL, BS/IP/SL(S) & type BS/IP/MSL.
- DIN Ubbelohde.

Part No. 1001453

See the different standards, models and cups (see page 289.)

---

**Ford cup thermostat for viscosity measurement “TV-1452”**

Cup models that conform to the following standards: DIN 53211, ISO 2431 and ASTM 1200.

Electronic digital control from 10°C to 60°C.

**Applications**

Thermostat Ford cups for viscosity measurement need to be maintained at a precise temperature of 10 and 60 °C.

**Features**

Made up of an independent Peltier thermostat control system that heats and cools. Made from AISI 304 stainless steel, with adjustable levelling feet supports, and central orifice for locating the cup.

**Control Panel**

Illuminate ON/OFF switch
Digital temperature display
Keypad to select readout and temperature.

**Model**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Temperature °C</th>
<th>Stability °C</th>
<th>Homogeneity °C</th>
<th>Read error</th>
<th>Resolution</th>
<th>Height / Width / Depth cm</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>3001452</td>
<td>10 to 60 °C</td>
<td>±0.1</td>
<td>±0.2</td>
<td>±0.5</td>
<td>0.1</td>
<td>23 34 30</td>
<td>130</td>
<td>5</td>
</tr>
</tbody>
</table>

See the different standards, models and cups (see page 289.)

---

**Viscometers**

Viscometers for the calibration of viscometers according to the following standards UNE 400313, ISO 3105, ASTM D445 and 2515.
Glass Viscometers

**VISCOMETER “UBBELOHDE”**
Suitable for transparent liquids.
Complete with calibration certificate.
Total length 283 mm.
Permanent amber markings.

**VISCOMETERS “CANNON-FENSKE”**
**TRANSPARENT**
Suitable for transparent liquids.
Complete with calibration certificate.
Constant at 40 °C to 100 °C.
Total length 250 mm.
Permanent amber markings.

**ACCESSORY**
Viscometers support rack.
Part No. 1025812
Capacity: 6 viscometers.

**VISCOMETERS “CANNON-FENSKE”**
**OPAQUE**
Suitable for opaque and transparent liquids.
Complete with calibration certificate.
Constant at 40 °C and 100 °C.
Total length 295 mm.
Permanent amber markings.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Size</th>
<th>Nominal constant</th>
<th>Viscosity range in cSt</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0</td>
<td>0.001</td>
<td>0.3 to 1</td>
</tr>
<tr>
<td>5600002</td>
<td>0C</td>
<td>0.003</td>
<td>0.6 to 3</td>
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<tr>
<td>5600003</td>
<td>0B</td>
<td>0.005</td>
<td>1 to 5</td>
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<td>5600004</td>
<td>1</td>
<td>0.01</td>
<td>2 to 10</td>
</tr>
<tr>
<td>5600005</td>
<td>1C</td>
<td>0.03</td>
<td>6 to 30</td>
</tr>
<tr>
<td>5600006</td>
<td>1B</td>
<td>0.05</td>
<td>10 to 50</td>
</tr>
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<td>5600007</td>
<td>2</td>
<td>0.1</td>
<td>20 to 100</td>
</tr>
<tr>
<td>5600008</td>
<td>2C</td>
<td>0.3</td>
<td>60 to 300</td>
</tr>
<tr>
<td>5600009</td>
<td>2B</td>
<td>0.5</td>
<td>100 to 500</td>
</tr>
<tr>
<td>5600010</td>
<td>3</td>
<td>1.0</td>
<td>200 to 1000</td>
</tr>
<tr>
<td>5600011</td>
<td>3C</td>
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<td>600 to 3000</td>
</tr>
<tr>
<td>5600012</td>
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<td>5600013</td>
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<tr>
<td>5600014</td>
<td>4C</td>
<td>30.0</td>
<td>6000 to 30000</td>
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</table>

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Size</th>
<th>Nominal constant</th>
<th>Viscosity range in cSt</th>
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<tr>
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<td>0.4 a 1.6</td>
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<td>0.004</td>
<td>0.8 a 3.2</td>
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<td>0.008</td>
<td>1.6 a 6.4</td>
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<td>0.015</td>
<td>3 a 15</td>
</tr>
<tr>
<td>5600054</td>
<td>150</td>
<td>0.035</td>
<td>7 a 35</td>
</tr>
<tr>
<td>5600055</td>
<td>200</td>
<td>0.1</td>
<td>20 a 100</td>
</tr>
<tr>
<td>5600056</td>
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<td>0.25</td>
<td>50 a 200</td>
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<tr>
<td>5600057</td>
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<td>0.5</td>
<td>100 a 500</td>
</tr>
<tr>
<td>5600058</td>
<td>400</td>
<td>1.2</td>
<td>240 a 1200</td>
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<tr>
<td>5600059</td>
<td>450</td>
<td>2.5</td>
<td>500 a 2500</td>
</tr>
<tr>
<td>5600060</td>
<td>500</td>
<td>8</td>
<td>1600 a 8000</td>
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<tr>
<td>5600061</td>
<td>600</td>
<td>20</td>
<td>4000 a 20000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Size</th>
<th>Nominal constant</th>
<th>Viscosity range in cSt</th>
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<tbody>
<tr>
<td>5600065</td>
<td>25</td>
<td>0.002</td>
<td>0.4 a 1.6</td>
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<tr>
<td>5600066</td>
<td>50</td>
<td>0.004</td>
<td>0.8 a 3.2</td>
</tr>
<tr>
<td>5600067</td>
<td>75</td>
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<td>1.6 a 6.4</td>
</tr>
<tr>
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<td>3 a 15</td>
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<tr>
<td>5600069</td>
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<td>5600076</td>
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<td>20</td>
<td>4000 a 20000</td>
</tr>
</tbody>
</table>
**Glass Viscometers**

**MICRO-UBBELHODE VISCOMETER 3 ml**
Suitable for transparent liquids.
Calibration certificate.
Nominal overall length 290 mm.
Permanent ring marks in amber.
Sample filling volume: 3 ml.

**“U-TUBE REVERSE FLOW” VISCOMETER BS/IP/RF**
Suitable for opaque liquids.
Calibration certificate.
Nominal overall length 275 mm.
Permanent ring marks in amber.

**BS/U TUBE VISCOMETER**
Suitable for transparent liquids.
Calibration certificate.
Nominal overall length 300 mm.
Permanent ring marks in amber.

**OSTWALD PATTERN VISCOMETER**
Suitable for transparent liquids.
Calibration certificate at 20ºC.
Nominal overall length 250 mm.
Permanent ring marks in amber.
Sample filling volume 10 ml.

<table>
<thead>
<tr>
<th>Code</th>
<th>Size</th>
<th>Nominal constant</th>
<th>Viscosity range in cSt</th>
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<tbody>
<tr>
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<td>0,4 to 6</td>
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<tr>
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<td>lc</td>
<td>0,03</td>
<td>1,2 to 18</td>
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<tr>
<td>5600022</td>
<td>II</td>
<td>0,1</td>
<td>4 to 60</td>
</tr>
<tr>
<td>5600023</td>
<td>llc</td>
<td>0,3</td>
<td>12 to 180</td>
</tr>
<tr>
<td>5600024</td>
<td>III</td>
<td>1,0</td>
<td>40 to 800</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Size</th>
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<tbody>
<tr>
<td>5600025</td>
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<td>0,6 to 3</td>
</tr>
<tr>
<td>5600026</td>
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<td>60000 to 300000</td>
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<table>
<thead>
<tr>
<th>Code</th>
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<th>Viscosity range in cSt</th>
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<tbody>
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<td>0,9 to 3</td>
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<td>200 to 1000</td>
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</tr>
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<td>2000 to 10000</td>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Size</th>
<th>Nominal constant</th>
<th>Efflux time between ring marks Water at 20 ºC (seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5600044</td>
<td>45</td>
<td>0,022</td>
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</tr>
<tr>
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<td>0,01</td>
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</tr>
<tr>
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<td>125</td>
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<td>125</td>
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