

## VD 23 - Vacuum drying oven for non-flammable solvents

The VD series offers safe drying with homogenous temperature distribution, thanks to its APT.line™ air jacket system. Optimum heat transfer through patented expansion rack technology; the racks can be positioned as needed and are easy to clean. In addition to these many features, the units have an individually programmable controller.



### ► Performance features and equipment:

- Electronically controlled APT.line™ preheating chamber technology with 2 patented expansion racks assures temperature accuracy and reproducible results
- Temperature range 15 °C (27 °F) above ambient temperature up to 200 °C (392 °F)
- MP controller with 2 programs with 10 sections each, or alternatively 1 program with 20 sections
  - Integrated week program timer with real time function
  - Digital temperature setting with an accuracy of one degree
  - Elapsed time indicator
- Precision-adjustable ventilation valve (at VD 23 the standard inert gas connection is also used as ventilation valve.)
- Precision-adjustable inert gas valve with Cross-Flow-Technology
- All electrical components are decoupled from the interior chamber
- Spring mounted safety glass panel with shatter protection
- Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm
- Measuring port DN 16
- Analog pressure gauge (display pressure difference between the inner chamber and the ambient pressure)
- Electro polished inner chamber, suction and ventilation tubes, pressure container, expansion racks and ball valve are made of stainless steel
- Door gasket made of tempered silicone
- 2 x 24 V DC (max 0.4 A) switching outputs, switched via 2 control contact of the program editor
- RS 422 interface for use with optional GMP/GLP and FDA guideline 21 CFR Part 11 compliant APT-COM™ DataControlSystem software
- 2 patented, flexible aluminum expansion racks
- Available as complete system, with module and vacuum pump.
- Features:
  - Reduced sound level
  - Practical working height
  - Well balanced system
- BINDER test certificate



VD 23

<b>Exterior dimensions</b>	
Width (mm/inch)	515 / 20.3
Height (inclusive feet) (mm/inch)	655 / 25.8
Depth (mm/inch)	500 / 19.7
Width option vacuum module (mm/inch)	515 / 20.3
Height option vacuum module (mm/inch)	624 / 24.6
Depth option vacuum module (mm/inch)	500 / 19.7
Total width with option vacuum module (mm/inch)	515 / 20.3
Total height with option vacuum module (mm/inch)	1279 / 50.4
Total depth with option vacuum module (mm/inch)	500 / 19.7
Plus door handle, connection (mm/inch)	100 / 4.0
Wall clearance rear (mm/inch)	100 / 3.9
Wall clearance side (mm/inch)	135 / 5.3
<b>Interior dimensions</b>	
Width (mm/inch)	285 / 11.2
Height (mm/inch)	285 / 11.2
Depth (mm/inch)	285 / 11.2
Interior volume (l/cu.ft.)	23 / 0.8
Expansion racks (Aluminium) (number standard/max.)	2 / 4
Distance between the racks (width x depth) (mm/inch)	53 / 2.1
Usable space per rack (width x depth) (mm/inch)	234 x 280 / 9.2 x 11
Load per rack (kg/lbs.)	20 / 44
Permitted total load (kg/lbs.)	35 / 77
Weight of the unit (empty) (kg/lbs.)	63 / 139
<b>Temperature data</b>	
Temperature range, 15 °C (27 °F) above ambient up to (°C / °F)	200 / 392
Temperature variation 1)	
at 100 °C (212 °F) (± °C)	1.5
at 200 °C (392 °F) (± °C)	3
Temperature fluctuation 1) (± °C)	0.1
Heating up time 1) 2) switch setting II	
to 100 °C (Min.)	50
to 200 °C (Min.)	100
Vacuum connection with small flange (DN mm/inch)	16 / 0.63
Measuring access port with small flange (DN mm/in)	16 / 0.63
Inert gas connection with flow limiter - thread (RP)	3 / 8
Permitted end vacuum (mbar / torr)	1 x 10 <sup>-2</sup>
Leak rate (max. bar 1/h / torr 1/h)	1 x 10 <sup>-2</sup>
Compressed air connection for pressure - encapsulation (Ø mm)	
<b>Electrical data</b>	
Housing protection acc. to EN 60529	IP 20
Nominal voltage (±10 %) 50 / 60 Hz (V)	230
Nominal power (kW)	0.8
Energy consumption	
at 100 °C (W)	105

at 200 °C (W)

280

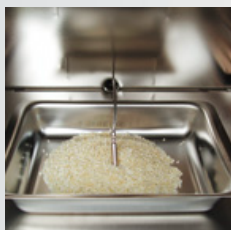
- 1) value with aluminium racks
- 2) up to 98 % of the set value

All technical data are specified for units with standard equipment at an ambient temperature of 25 °C and a voltage fluctuation of  $\pm 10$  %. The temperature data are determined in accordance to factory standard following DIN 12880 respecting the recommended wall clearances of 10 % of the height, width and depth of the inner chamber. All indications are average values, typical for units produced in series. We reserve the right to alter technical specifications at all times.



▶ **Measuring port**

Vacuum-tight bushing for instrument connection (9-pin) into the unit.



▶ **Specimen temperature display**

Using a PT 100 sensor with digital temperature display.



▶ **BINDER Service**

This BINDER service is available to maintain your vacuum drying ovens in top condition. In addition to calibrating your equipment, we will also perform a comprehensive safety inspection in accordance with DIN.



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Connection kit consists of: clamping ring, aluminum, centering ring, small flange with hose nozzle, 2.5 m (8.2 ft.) rubber hose and 2 hose clamps	<input type="radio"/>
Measurement port for air-tight lead-through of measurement lines into the unit (9 - pin)	<input type="radio"/>
Factory calibration certificate. Measurement in center of chamber at 100 °C (212 °F) or at specified testing temperature	<input type="radio"/>
Extension to factory calibration certificate. Each additional measurement at an additional measuring point or temperature	<input type="radio"/>
Factory calibration certificate for digital pressure display, extension. Each additional measurement at an additional pressure (range: 20-900 mbar)	<input type="radio"/>
Factory calibration certificate for digital pressure display. Measurement at 100 mbar or at specified pressure (range: 20-900 mbar)	<input type="radio"/>
Specimen temperature measurement via flexible PT 100 sensor with digital temperature display	<input type="radio"/>
Factory calibration certificate for digital specimen temperature display. Measurement at 100 °C (212 °F) or at specified testing temperature	<input type="radio"/>
VP 1.1 chemical membrane pump (nominal air flow 2.0 m <sup>3</sup> /hour), final pressure 7 mbar, with separator and emission condenser 230 V 1N ~ 50 / 60 Hz	<input type="radio"/>
VP 2.1 chemical membrane pump (nominal air flow 3.4 m <sup>3</sup> /hour), final pressure 7 mbar, with separator and emission condenser 230 V 1N ~ 50 / 60 Hz	<input type="radio"/>
VP 3.1 speed-controlled chemical membrane pump (nominal air flow 4.6 m <sup>3</sup> /hour), final pressure 1.5 mbar, with separator and emission condenser 230 V 1N ~ 50 / 60 Hz	<input type="radio"/>
Expansion racks, aluminum	<input type="radio"/>
Expansion racks, stainless steel	<input type="radio"/>
Exchange and calibration to stainless steel expansion racks, standard equipment aluminum expansion racks will be replaced	<input type="radio"/>
Door gasket, FKM (Viton)	<input type="radio"/>
Digital pressure display, measuring area from 1 mbar to atm. pressure, display accuracy 1 mbar	<input type="radio"/>
Vacuum module for installation of vacuum pumps, with switchable power socket (ON/OFF) (230 V / 16 A)	<input type="radio"/>
Vacuum module with chemical membrane pump VP 1 (nominal air flow 1.7 m <sup>3</sup> /hour), final pressure 9 mbar, with separator and emission condenser, including all necessary vacuum connection parts. Pump is supplied ready for connection in separate packaging	<input type="radio"/>
Vacuum module with chemical membrane pump VP 2 (nominal air flow 3.0 m <sup>3</sup> / hour), final pressure 2 mbar, with separator and emission condenser, including all necessary vacuum connection parts. Pump is supplied ready for connection in separate packaging	<input type="radio"/>
Vacuum module with speed-controlled chemical membrane pump VP 3 (nominal air flow 3.5 m <sup>3</sup> / hour), final pressure 2 mbar, with separator and emission condenser, including all necessary vacuum connection parts, as well as digital vacuum controller (measuring precision 1 mbar)	<input type="radio"/>