# Model VD 23 | Vacuum drying chambers for non-flammable solvents

**BINDER's VD series vacuum drying chambers deliver impressive performance through their precise temperature control and gentle drying. The patented expansion rack technology from BINDER also optimizes heat transfer. The shelves can be repositioned for flexible placement and the interior of the chamber is easy to clean.**

## BENEFITS

- Fast, gentle drying
- Optimum heat transfer through large thermal conducting plates
- Safe work thanks to proven safety concept
- Also option of modular complete system with vacuum pump and pump chamber



Model 23



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## IMPORTANT FEATURES

- Temperature range: +9°C above ambient temperature to +220 °C
- Controller with digital display of pressure and temperature
- Program-controlled drying monitoring with automatic ventilation at end of process
- Internal data logger, measured values can be read out in open format via USB
- 1 aluminum expansion rack, can be custom-positioned
- Inert gas connection
- Universal access port DN 16 - for the introduction of external measuring devices
- Shatterproof, spring-mounted safety glass panel
- Large viewing window with option of interior lighting
- Computer interface: Ethernet

## OPTIONAL EQUIPMENT

- Touchscreen Controller - Graphical display of main process parameter
- Expansion racks - Choice of aluminum or stainless steel racks depending on the application requirements
- Analogue output for temperature and pressure signals - for external monitoring and evaluation of the process parameters, integration into in-house systems is possible
- Universal ventilation - Selection of different ventilation by air or inert gas
- Universal access port DN 40 - for the introduction of external measuring devices
- Multi Management Software APT-COM - Manage, record and document device parameters
- Services - extensive services ensure correct device function

## ORDERING INFORMATION

| Interior volume [L] | Power supply - unit fuse | Plug* | Version | Model version | Art.-No. |
|---|---|---|---|---|---|
| **Model VD 23** | | | | | |
| 24 | 200...230 V 1~ 50/60 Hz -6,3 A | CEE 7/7 | Standard | VD023-230V | 9630-0001 |
| | 100...120 V 1~ 50/60 Hz -10,0 A | NEMA 5-15 | Standard | VD023UL-120V | 9630-0005 |

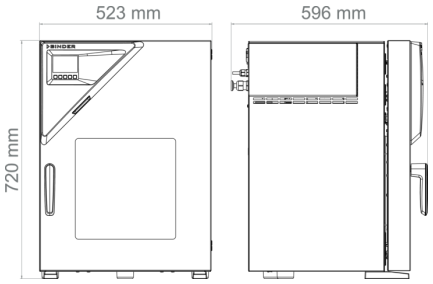
## TECHNICAL DATA

| | | |
|---|---|---|
| **Data** | | |
| Article Number | 9630-0001 | 9630-0005 |
| Designation | VD023-230V | VD023UL-120V |
| Option model | Standard | Standard |
| **Performance Data Temperature** | | |
| Temperature range | +9 °C above ambient temperature to 220 °C | +9 °C above ambient temperature to 220 °C |
| Temperature uniformity at 100°C | 1.0 ± K | 1.0 ± K |
| Temperature fluctuation at 100°C | 0.1 ± K | 0.1 ± K |
| Heating up time to 100°C | 80 min | 80 min |
| **Vacuum Data** | | |
| Leak rate | 0,01 bar/h | 0,01 bar/h |
| Pressure fluctuation over time at 50 mbar | 1 ± mbar | 1 ± mbar |
| Pressure fluctuation over time at 400 mbar | 70 ± mbar | 70 ± mbar |
| **Electrical data** | | |
| Rated Voltage | 200...230 V | 100...120 V |
| Power frequency | 50/60 Hz | 50/60 Hz |
| Nominal power | 0,9 kW | 0,9 kW |
| Unit fuse | 6,3 A | 10,0 A |
| Phase (Nominal voltage) | 1~ | 1~ |
| **Connections** | | |
| Vacuum connection with small flange | 16 DN mm | 16 DN mm |
| Measuring access port with small flange | 16 DN mm | 16 DN mm |
| Compressed air connection for pressure-encapsulation | 5 NW | 5 NW |
| **Dimensions and weights** | | |
| Interior volume | 24 L | 24 L |
| Net weight of the unit (empty) | 64 kg | 64 kg |
| Load per rack | 20 kg | 20 kg |
| Permitted load | 50 kg | 50 kg |
| Wall clearance back | 100 mm | 100 mm |
| Wall clearance sidewise | 70 mm | 70 mm |

| | | |
|---|---|---|
| **Housing dimensions not incl. fittings and connections** | | |
| Width net | 523 mm | 523 mm |
| Height net | 698 mm | 698 mm |
| Depth net | 413 mm | 413 mm |
| **Internal Dimensions** | | |
| Interior width | 285 mm | 285 mm |
| Interior height | 285 mm | 285 mm |
| Interior depth | 295 mm | 295 mm |
| Unit doors | 1 | 1 |
| **Environment-specific data** | | |
| Sound-pressure level | 40 dB(A) | 40 dB(A) |
| Energy consumption at 100°C | 140 Wh/h | 140 Wh/h |
| **Fixtures** | | |
| Number of shelves (std./max.) | 1/4 | 1/4 |

All technical data is specified for unloaded units with standard equipment at an ambient temperature of +22 °C ±3 °C and a power supply voltage fluctuation of ±10%. The temperature data is determined in accordance to BINDER factory standard following DIN 12880, observing 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 change technical specifications at any time.

## DIMENSIONS Incl. fittings and connections [mm]




## OPTIONS

| Designation | Description | VD 23 | * | Art.-No. |
|---|---|---|---|---|
| Additional universal ventilation | Additional universal connection for ventilation with ambient air or inert gas. Flow limiter thread (G"), and connection with 3/8" male thread. | • | - | 8612-0001 |
| Analog output 4-20 mA | for temperature and pressure values (output not adjustable) | • | - | 8612-0004 |
| Calibration certificate, expanded | for temperature; for extending the measurement in center of chamber to include another test temperature | • | - | 8012-1127 |
| Calibration certificate, pressure | Calibration of the pressure display to a specified value, including certificate | • | - | 8012-2021 |
| | Extension of the calibration of the pressure display by another pressure value, including certificate | • | - | 8012-2022 |

| Designation | Description | VD 23 | * | Art.-No. |
|---|---|---|---|---|
| Calibration certificate, temperature | for temperature, measurement in center of chamber at specified temperature | • | - | 8012-1145 |
| | temperature measurement incl. certificate, 9 measuring points at specified temperature | • | - | 8012-0916 |
| | temperature measurement incl. certificate, 15- 18 measuring points at specified temperature | • | - | 8012-0919 |
| Door gasket | made of FKM, silicone-free | • | - | 8612-0007 |
| Door lock | lockable door handle | • | - | 8612-0002 |
| Expansion racks | stainless steel expansion rack instead of standard aluminum expansion rack, incl. calibration | • | - | 8612-0011 |
| Interior lighting | LED light strips on the left and right in the door | • | - | 8612-0005 |
| Temperature measurement of the specimen | with flexible Pt 100 sensor and digital specimen temperature display | • | - | 8612-0006 |
| Touchscreen controller | Large display panel with intuitive operation, actual and set values of main process parameters are shown simultaneously on the display. In addition, the graphic chronological evaluation of process parameters is displayed. | • | - | 8612-0015 |
| Universal access port | Additional DN 40 small flange universal access port with blind flange, for positioning sensors or supply lines in the chamber. | • | - | 8612-0003 |

## ACCESSORIES

| Designation | Description | VD 23 | * | Art.-No. |
|---|---|---|---|---|
| APT-COM™ 4 BASIC-Edition | for simple logging and documentation requirements with up to 5 networked units. | | | |
| | version 4, BASIC edition | • | - | 9053-0039 |
| APT-COM™ 4 GLP-Edition | for working under GLP-compliant conditions. Measured values are documented in a tamper-proof way in line with the requirements of FDA Regulation 21 CFR 11. | | | |
| | version 4, GLP edition | • | - | 9053-0042 |
| APT-COM™ 4 PROFESSIONAL-Edition | convenient unit and user management built on the BASIC edition. Suitable for networking up to 100 units. | | | |
| | version 4, PROFESSIONAL edition | • | - | 9053-0040 |
| Connection kit VD VP1-VP2 | For vacuum pump VP1 and VP2. Consisting of plastic hose 1.9 m long, clamping ring, universal centering ring and small flange adapter DN 16 to hose nozzle DN 10. | • | - | 8012-2613 |
| Emissions condenser VP1-VP2 | For vacuum pump VP1 and VP2. Mounting kit for upgrading the pump with a condenser for recovering emissions. | • | - | 8012-2615 |
| Expansion racks | aluminum | • | - | 8012-2055 |
| | stainless steel | • | - | 8012-2259 |
| pH-neutral detergent | concentrated, for gentle remove of residual contaminants; 1 kg | • | - | 8012-2250 |

| Designation | Description | VD 23 | * | Art.-No. |
|---|---|---|---|---|
| Pump chamber VD 23 with vacuum pump VP1 | Pump chamber for installation of vacuum pumps, with switchable power socket. Including chemical membrane pump with a nominal air flow of 2.0 $m^3$/hour, final pressure 7 mbar and connection kit VD VP1-VP2. | | | |
| | 120 V / 50-60 Hz option model | • | - | 8012-2618 |
| | 230 V / 50-60 Hz option model | • | - | 8012-2616 |
| Pump chamber VD 23 with vacuum pump VP 2 | Pump chamber for installation of vacuum pumps, with switchable power socket. | | | |
| | 120 V / 50-60 Hz option model | • | - | 8012-2619 |
| | 230 V / 50-60 Hz option model | • | - | 8012-2617 |
| Qualification documents | IQ/OQ/PQ documents – supporting documents for validation performed by customers, according to customer requirements, PQ section added to qualification folder IQ/OQ; parameters: temperature, $CO_2$, $O_2$ – or pressure, depending on unit | | | |
| | Digital in PDF format | • | - | 7057-0005 |
| | Hard copy inside folder | • | - | 7007-0005 |
| | IQ/OQ documents – supporting documents for validation performed by customers, consisting of: IQ/OQ checklists incl. calibration guide and comprehensive unit documentation; parameters: temperature, $CO_2$, $O_2$, pressure, depending on unit | | | |
| | Digital in PDF format | • | - | 7057-0001 |
| | Hard copy inside folder | • | - | 7007-0001 |
| Vacuum pump VP1 | Chemical membrane pump with a nominal air flow of 2.0 $m^3$/h and final pressure 7 mbar. Option model can be switched between 230V/50Hz and 120V/60Hz. | • | - | 5013-0256 |
| Vacuum pump VP2 | Chemical membrane pump with a nominal air flow of 3.4 $m^3$/h and final pressure 1.5 mbar. Option model can be switched between 230V/50Hz and 120V/60Hz. | • | - | 5013-0257 |

## SERVICES

| Designation | Description | * | Art.-No. |
|---|---|---|---|
| **Calibration services** | | | |
| Calibration certificate, temperature | Calibration of one (1) test temperature specified by the user in center of chamber, including certificate | 05 | DL30-0160 |
| | Extension of calibration of one (1) additional test temperature specified by the user in the center of the usable space, including certificate | 05 | DL30-0102 |
| Pressure calibration | Digital pressure display calibration at a specified test pressure of 20–900 mbar, including certificate | 05 | DL30-0410 |
| | Expansion – Digital pressure display calibration at a specified test pressure of 20–900 mbar, including certificate | 05 | DL30-0411 |
| Temperature measurement, 9 measuring points | Temperature measurement with 9 measuring points with a set value specified by the user, including certificate | 05 | DL30-0109 |
| Temperature measurement, 15 measuring points | Temperature measurement with 15 measuring points with a set value specified by the user, including certificate | 05 | DL30-0218 |

| Designation | Description | * | Art.-No. |
|---|---|---|---|
| **Installation services** | | | |
| Unit commissioning | Connect the unit to the customer-side connections (electricity, water, wastewater, gas), basic functions check, brief operating instructions. (excl.: unpacking, setup, controller instructions, programming, installation work) | 05 | DL10-0170 |
| Unit instructions | Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming | 05 | DL10-0550 |
| **Maintenance contracts** | | | |
| BRONZE 3-year maintenance contract | Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts | 05 | DL20-0710 |
| GOLD 3-year aintenance contract VD + VP1 | Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts, testing of all key functions, replacement of wear parts, calibration of one test temperature specified by the user in the center of the usable space, including certificate | 05 | DL20-0981 |
| | | 05 | DL20-0982 |
| GOLD 3-year maintenance contract | Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts, testing of all key functions, replacement of wear parts, calibration of one test temperature specified by the user in the center of the usable space, including certificate | 05 | DL20-0980 |
| SILVER 3-year maintenance contract | Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts, testing of all key functions, calibration of one test temperature specified by the user in the center of the usable space, without certificate | 05 | DL20-0880 |
| **Maintenance services** | | | |
| Maintenance | One-off maintenance service in accordance with maintenance schedule. Visual inspection of mechanical and electrical components, testing of all key functions. Calibration of a test temperature specified by the user in center of usable space without certificate | 05 | DL20-0615 |
| VAP 1 vacuum pump maintenance | Maintenance service of the vacuum pump according to the maintenance schedule, visual inspection, replacement of the diaphragms, O-rings and seals, (Service Kit included in the scope of services) as well as final functional test | 05 | DL20-0410 |
| VAP 2 vacuum pump maintenance | Maintenance service of the vacuum pump according to the maintenance schedule, visual inspection, replacement of the diaphragms, O-rings and seals, (Service Kit included in the scope of services) as well as final functional test | 05 | DL20-0420 |
| VP 1 vacuum pump maintenance | Maintenance service of the vacuum pump according to the maintenance schedule, visual inspection, replacement of the diaphragms, O-rings and seals, (Service Kit included in the scope of services) as well as final functional test | 05 | DL20-0415 |
| VP2 vacuum pump maintenance | Maintenance service of the vacuum pump according to the maintenance schedule, visual inspection, replacement of the diaphragms, O-rings and seals, (Service Kit included in the scope of services) as well as final functional test | 05 | DL20-0425 |
| **Validation services** | | | |
| Execution of IQ/OQ | Execution of IQ/OQ in accordance with qualification folder | 05 | DL42-0310 |
| Execution of IQ/OQ/PQ | Execution of IQ/OQ/PQ in accordance with qualification folder | 05 | DL44-0500 |
| **Warranty service** | | | |
| 1-year warranty extension | The warranty is extended by 1 year from the delivery date, wear parts are excluded | 05 | DL50-0020 |

## NOTES

05 Quoted prices do not include travel costs. Please refer to the chapter on BINDER Service for travel costs for your region. Quoted prices for services performed in Switzerland do not include a country-specific added fee (available on request).

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