

# Model VD 56 | 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 56

## MAIN 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
- 2 relay outputs, 24 V DC (max. 0.4 A)

## 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

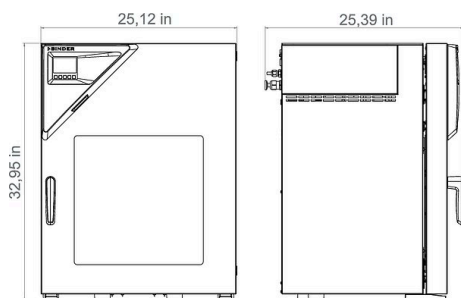
## ORDERING INFORMATION

| Interior volume [cu.ft.] | Voltage                 | Option model | Version      | Art.-No.  |
|--------------------------|-------------------------|--------------|--------------|-----------|
| 1.9                      | 200...230 V 1~ 50/60 Hz | Standard     | VD056-230V   | 9630-0002 |
|                          | 100...120 V 1~ 50/60 Hz | Standard     | VD056UL-120V | 9630-0006 |

**TECHNICAL DATA**

| Description   | VD056-230V <sup>1</sup> | VD056UL-120V <sup>1</sup> |
|---|-------------------------|---------------------------|
| <b>Article Number</b>   | <b>9630-0002</b>        | <b>9630-0006</b>          |
| <b>Performance Data Temperature</b>   |                         |                           |
| Temperature range +9 °C above ambient temperature to [°C]                   | 220                     | 220                       |
| Temperature variation at 100 °C [± K]                                       | 1.2                     | 1.2                       |
| Temperature fluctuation [± K]   | 0.1                     | 0.1                       |
| Heating-up time to 100 °C [min]   | 80                      | 80                        |
| <b>Vacuum Data</b>  |                         |                           |
| Leak rate [bar/h]   | 0.01                    | 0.01                      |
| <b>Electrical data</b>  |                         |                           |
| Rated Voltage [V]   | 200...230               | 100...120                 |
| Power frequency [Hz]  | 50/60                   | 50/60                     |
| Nominal power [kW]  | 1.4                     | 1.4                       |
| Unit fuse [A]   | 8                       | 16                        |
| Phase (Nominal voltage)   | 1~                      | 1~                        |
| <b>Connections</b>  |                         |                           |
| Vacuum connection with small flange [DN mm]                                 | 16                      | 16                        |
| Measuring access port with small flange [DN mm]                             | 16                      | 16                        |
| Universal connection for air / inert gas with flow limiter thread (RP") 3/8 | 3/8                     | 3/8                       |
| Compressed air connection for pressure-encapsulation [NW]                   | 5                       | 5                         |
| <b>Measures</b>   |                         |                           |
| Interior volume [cu.ft.]  | 1.9                     | 1.9                       |
| Net weight of the unit (empty) [lbs]  | 209                     | 223                       |
| Permitted load [lbs]  | 132                     | 132                       |
| Load per rack [lbs]   | 44                      | 44                        |
| Viewing window width [in]   | 16.55                   | 16.55                     |
| Viewing window height [in]  | 16.55                   | 16.55                     |
| Wall clearance back [in]  | 3.94                    | 3.94                      |
| Wall clearance sidewise [in]  | 2.76                    | 2.76                      |
| <b>Internal Dimensions</b>  |                         |                           |
| Width [in]  | 15.76                   | 15.76                     |
| Height [in]   | 15.76                   | 15.76                     |
| Depth [in]  | 13.51                   | 13.51                     |
| <b>Doors</b>  |                         |                           |
| Unit doors  | 1                       | 1                         |
| <b>Housing dimensions not incl. fittings and connections</b>                |                         |                           |
| Width net [in]  | 25.14                   | 25.14                     |
| Height net [in]   | 32.11                   | 32.11                     |
| Depth net [in]  | 18.16                   | 18.16                     |
| <b>Environment-specific data</b>  |                         |                           |
| Sound-pressure level [dB(A)]  | 40                      | 40                        |
| <b>Fixtures</b>   |                         |                           |
| Number of shelves (std./max.)   | 1/5                     | 1/5                       |

<sup>1</sup> 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   | * | Art.-No.  |
|--|---|---|-----------|
| <b>Additional universal ventilation</b>        | Additional universal connection for ventilation with ambient air or inert gas. Flow limiter thread (RP <sup>h</sup> ), and connection with 3/8" male thread.  | - | 8612-0001 |
| <b>Analog output 4-20 mA</b>                   | for temperature and pressure values (output not adjustable)   | - | 8612-0004 |
| <b>Calibration certificate, expanded</b>       | for temperature; for extending the measurement in center of chamber to include another test temperature   | - | 8012-1127 |
| <b>Calibration certificate, pressure</b>       | for digital pressure display, measurement at 100 mbar or at specified pressure (range 20 – 900 mbar)  | - | 8012-0440 |
| <b>Calibration certificate, temperature</b>    | for temperature, measurement in center of chamber at specified temperature  | - | 8012-1145 |
|  | temperature measurement incl. certificate, 15- 18 measuring points at specified temperature   | - | 8012-0919 |
|  | temperature measurement incl. certificate, 9 measuring points at specified temperature  | - | 8012-0916 |
| <b>Door gasket</b>                             | made of FKM, silicone-free  | - | 8612-0008 |
| <b>Door lock</b>                               | lockable door handle  | - | 8612-0002 |
| <b>Expansion racks</b>                         | stainless steel expansion rack instead of standard aluminum expansion rack, incl. calibration   | - | 8612-0012 |
| <b>Interior lighting</b>                       | LED light strips on the left and right in the door  | - | 8612-0005 |
| <b>Temperature measurement of the specimen</b> | with flexible Pt 100 sensor and digital specimen temperature display  | - | 8612-0006 |
| <b>Touchscreen controller</b>                  | 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 |
| <b>Universal access port</b>                   | Additional DN 40 small flange universal access port with blind flange, for positioning sensors or supply lines in the chamber.  | - | 8612-0003 |

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**ACCESSORIES**

| Designation                      | Description  | * | Art.-No.  |
|----------------------------------|--|---|-----------|
| <b>Expansion racks</b>           | stainless steel  | - | 8009-1092 |
|                                  | aluminum   | - | 8009-1030 |
| <b>Multi Management Software</b> | Multi Management Software APT-COM™                             |   |           |
|                                  | version 4, BASIC edition                                       | - | 9053-0039 |
|                                  | version 4, GLP edition   | - | 9053-0042 |
|                                  | version 4, PROFESSIONAL edition                                | - | 9053-0040 |
| <b>pH-neutral detergent</b>      | concentrated, for gentle remove of residual contaminants; 1 kg | - | 1002-0016 |

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| Designation                                 | Description   | * | Art.-No.  |
|---|---|---|-----------|
| <b>Qualification documents</b>              | 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 <sub>2</sub> , O <sub>2</sub> , pressure, depending on unit |   |           |
|   | Digital in PDF format   | – | 7057-0001 |
|   | Hard copy inside folder   | – | 7007-0001 |
|   | 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 <sub>2</sub> , O <sub>2</sub> – or pressure, depending on unit     |   |           |
| <b>Vacuum module with vacuum pump VAP 1</b> | Pump chamber for vacuum pumps, with switchable power socket. Chemical membrane pump with a nominal air flow of 2.0 m <sup>3</sup> /hour, final pressure 7 mbar  |   |           |
|   | 120 V / 50-60 Hz option model   | – | 8012-1962 |
|   | 230 V / 50-60 Hz option model   | – | 8012-1959 |
| <b>Vacuum module with vacuum pump VAP 2</b> | Pump chamber for vacuum pumps, with switchable power socket. Chemical membrane pump with a nominal air flow of 4.0 m <sup>3</sup> /hour, final pressure 1,8 mbar  |   |           |
|   | 120 V / 50-60 Hz option model   | – | 8012-1968 |
|   | 230 V / 50-60 Hz option model   | – | 8012-1965 |
| <b>Vacuum pump connection kit</b>           | for vacuum pump VAP1 and VAP2; consisting of aluminum clamping ring, universal centering ring, small flange with hose nozzle, (2.5 m) rubber hose and 2 hose clamps   | – | 8012-1995 |
| <b>Vacuum pump VAP 1</b>                    | Chemical membrane pump with a nominal air flow of 2.0 m <sup>3</sup> /hour, final pressure 7 mbar   |   |           |
|   | 120 V / 50-60 Hz option model   | – | 5013-0223 |
|   | 230 V / 50-60 Hz option model   | – | 5013-0217 |
| <b>Vacuum pump VAP 2</b>                    | Chemical membrane pump with a nominal air flow of 4.0 m <sup>3</sup> /hour, final pressure 1,8 mbar   |   |           |
|   | 120 V / 50-60 Hz option model   | – | 5013-0219 |
|   | 230 V / 50-60 Hz option model   | – | 5013-0218 |

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## SERVICES

| Designation                                  | Description  | *          | Art.-No.  |
|--|--|------------|-----------|
| <b>Installation services</b>                 |  |            |           |
| Unit installation                            | 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         | DL10-0100 |
| Unit instructions                            | Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming  | 05         | DL10-0500 |
| <b>Maintenance services</b>                  |  |            |           |
| 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 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 temperature/humidity/pressure value, including certificate         | 05         | DL20-0930 |
| 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         | DL20-0400 |
| 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         | DL20-0820 |
| <b>Calibration services</b>                  |  |            |           |
| Pressure calibration                         | Digital pressure display calibration at a specified test pressure of 20–900 mbar, including certificate  | 03, 04, 05 | DL32-0000 |
| Temperature calibration                      | Calibration of one (1) test temperature specified by the user in center of chamber including certificate   | 03, 04, 05 | DL30-0101 |
|  | Extension of calibration of one (1) additional test temperature specified by the user in the center of the usable space, including certificate   | 03, 04, 05 | DL30-0102 |
| Temperature measurement, 15 measuring points | Temperature measurement with 15 measuring points with a set value specified by the user, including certificate   | 03, 04, 05 | DL30-0218 |

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| <b>Designation</b>                          | <b>Description</b>  | <b>*</b>   | <b>Art.-No.</b> |
|---|---|------------|-----------------|
| Temperature measurement, 9 measuring points | Temperature measurement with 9 measuring points with a set value specified by the user, including certificate | 03, 04, 05 | DL30-0109       |
| <b>Validation services</b>                  |   |            |                 |
| Execution of IQ/OQ                          | Execution of IQ/OQ in accordance with qualification folder  | 05         | DL42-0300       |
| Execution of IQ/OQ/PQ                       | Execution of IQ/OQ/PQ in accordance with qualification folder   | 05         | DL44-0500       |
| <b>Warranty service</b>                     |   |            |                 |
| Warranty extension from 2 to 3 years        | The warranty is extended by 1 year from the delivery date, wear parts are excluded                            | -          | DL50-0020       |

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**NOTES**

- 01 Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge.
- 02 UL mark is not granted when this option is used.
- 03 Sensor calibration is performed in an accredited calibration laboratory.
- 04 Calibration is performed according to the BINDER factory standard.
- 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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