

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

A BINDER vacuum drying oven VD series gently dries materials with homogeneous temperature distribution. The patented expansion shelf technology from BINDER ensures optimal heat transfer. The shelves are easy to position where required and the inner chamber of the vacuum drying oven is easy to clean.

## BENEFITS

- Fast and gentle drying
- Direct heat transfer through large thermal conducting plates
- Safe work with one-of-a-kind safety concept
- Coordinated, modular system with vacuum pump and vacuum module



Model 23



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## MAIN FEATURES

- Temperature range: room temperature plus 15 °C to 200 °C
- APT.line™ preheating chamber technology
- Controller with time-segment and real-time programming
- 2 aluminum expansion racks
- Inert gas connection
- Shatterproof, spring-mounted safety glass panel
- Class 2 independent adjustable temperature safety device (DIN 12880) with visual alarm
- Computer interface: RS 422
- 2 relay outputs, 24 V DC (max. 0.4 A)

## ORDERING INFORMATION

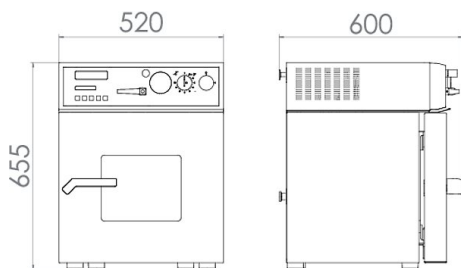
Interior volume [cu.ft.]	Voltage	Option model	Version	Art.-No.
Model VD 23				
0.8	230 V 1 ph 50/60 Hz	Standard	VD023-230V	9030-0029
	120 V 1 ph 60 Hz	Standard	VD023UL-120V	9030-0035

## TECHNICAL DATA

Description	VD023-230V <sup>1</sup>	VD023UL-120V <sup>1</sup>
Article Number	9030-0029	9030-0035
<b>Performance Data Temperature</b>		
Temperature range 15 °C above ambient temperature to [°C]	200	200
Temperature variation at 100 °C [± K]	1.5	1.5
Temperature fluctuation	0,1 ± K	0,1 ± K
Heating-up time to 100 °C [min]	65	65
<b>Vacuum Data</b>		
Permitted end vacuum [mbar]	0.01	0.01
Leak rate [bar/h]	0.01	0.01
<b>Electrical data</b>		
Rated Voltage [V]	230	120
Power frequency [Hz]	50/60	60
Nominal power [kW]	0.8	0.8
Unit fuse [A]	10	12.5
Phase (Nominal voltage) [ph]	1	1
<b>Connections</b>		
Vacuum connection with small flange [DN mm]	16	16
Measuring access port with small flange [DN mm]	16	16
Inert gas connection with flow limiter (RP <sup>®</sup> )	3/8	3/8
<b>Outer dimensions</b>		
Width net [mm]	515	515
Height net [mm]	665	665
Depth net [mm]	500	500
Wall clearance back [mm]	100	100
Wall clearance sidewise [mm]	135	135
Viewing window width [mm]	250	250
Viewing window height [mm]	207	207
<b>Doors</b>		
Unit doors	1	1
<b>Internal Dimensions</b>		
Width [mm]	285	285
Height [mm]	285	285
Depth [mm]	295	295
<b>Measures</b>		
Interior volume [L]	23	23
Net weight of the unit (empty) [kg]	63	63
permitted load [kg]	35	35
Load per rack [kg]	20	20
<b>Fixtures</b>		
Number of shelves (std./max.)	2/4	2/4

<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 AND ACCESSORIES

Designation	Description	*	Art.-No.
Calibration certificate, expanded	for temperature; for extending the measurement in center of chamber to include another test temperature	-	8012-1127
Calibration certificate, pressure	for digital pressure display, measurement at 100 mbar or at specified pressure (range 20 – 900 mbar)	-	8012-0440
Calibration certificate, temperature	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
Digital pressure display	Measuring range from 1 mbar to atmospheric pressure, display accuracy 1 mbar	-	8012-0805
Door gasket	made of FKM, silicone-free	03	8012-0500
Electric access port	9-pin, vacuum-tight access port for transmitting electrical currents, voltages, or signals (max. 50 V / 2 A per pin; vacuum connection DN 16 ISO-KF)	-	8012-0262
Expansion rack	aluminum	-	8009-0370
	stainless steel 1.4571 (V4A)	06	8009-0101
	stainless steel expansion rack instead of standard aluminum expansion rack, incl. calibration	-	8012-0616
Interface converter	RS 422 cable set and RS 232 / RS 422 interface converter for connection to 10-way plug distributor or for connection to a unit		
	120 V, 60 Hz option model	-	8012-0557
	230 V, 50/60 Hz option model	-	8012-0556
	RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit		
Interface converter, USB / RS422	120 V, 60 Hz option model	-	8012-0405
	230 V, 50/60 Hz option model	-	8012-0380
	RS 422 cable set and RS 422 / USB interface converter for connection to 10-way plug distributor or for connection to a unit (USB-powered converter)	-	8012-0665
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	-	1002-0016
RS 422 interface	modular plug distributor for 10 RS 422 interfaces	-	8012-0295
RS 422 interface, cable (15 m)	RS 422 connection cable (15 m) between plug distributor and RS 422 interface	-	5023-0036
RS 422 interface, cable (50 m)	RS 422 extension cable (50 m) between interface converter and unit or RS 232 / RS 422 plug distributor	-	5023-0117
Software	APT-COM™ communications software		
	version 2 to 3, GLP edition	19	9053-0016
	version 3, BASIC edition	19	9053-0014
	version 3, GLP edition	19	9053-0015
	version 3, STANDARD edition	19	9053-0013
Temperature measurement of the specimen	APT-COM™ communications software, price: for free		
	version 3, GLP DEMO Edition	19	9053-0008
Temperature measurement of the specimen	with flexible Pt 100 sensor and digital specimen temperature display	-	8012-0551

\* Notes › See last page

Designation	Description	*	Art.-No.
	to receive vacuum pumps, with switchable power socket		
Vacuum module	120 V, 13 A option model	–	8012-0273
	230 V, 16 A option model	–	8012-0130
Vacuum module with chemical membrane pump VP 1.1	nominal pumping speed 2.0 m <sup>3</sup> /h, final pressure 7 mbar, including all necessary parts for vacuum connection, ATEX conformity: II 3G IIC T3 X (only for inner chamber, areas coming in contact with media)		
	120 V option model	–	8012-0726
	230 V option model	–	8012-0723
Vacuum module with chemical membrane pump VP 2.1	nominal pumping speed 3.4 m <sup>3</sup> /h, final pressure 1.5 mbar,		
	120 V option model	–	8012-0727
	230 V option model	–	8012-0724
Vacuum module with speed-controlled chemical membrane pump VP 3.1	nominal pumping speed 4.6 m <sup>3</sup> /h, final pressure 1.5 mbar, including all necessary parts for vacuum connection, digital vacuum controller (accurate to ≤1 mbar), ATEX conformity: II 3G IIC T3 X (only for inner chamber, areas coming in contact with media)		
	120 V option model	–	8012-0728
	230 V option model	–	8012-0725
Vacuum pump connection kit	for vacuum pump VP 1.1, VP 2.1, VP 3.1; consisting of aluminum clamping ring, universal centering ring, small flange with hose nozzle, (2.5 m) rubber hose and 2 hose clamps	–	8012-0146
Vacuum pump VP 1.1	Chemical membrane pump with nominal pumping speed 2.0 m <sup>3</sup> /h, final pressure 7 mbar, ATEX conformity: II 3G IIC T3 X (only for interior, areas coming in contact with media)		
	120 V option model	–	5013-0118
	230 V option model	–	5013-0117
Vacuum pump VP 2.1	chemical membrane pump with nominal pumping speed 3.4 m <sup>3</sup> /h, final pressure 1.5 mbar, ATEX conformity: II 3G IIC T3 X (only for inner chamber, areas coming in contact with media)		
	120 V option model	–	5013-0120
	230 V option model	–	5013-0119
Vacuum pump VP 3.1	Speed-controlled chemical membrane pump with nominal pumping speed 4.6 m <sup>3</sup> /h, final pressure 1.5 mbar, ATEX conformity: II 3G IIC T3 X (only for interior, areas coming in contact with media)		
	120 V option model	–	5013-0122
	230 V option model	–	5013-0121

\* Notes › See last page

## SERVICES

Designation	Description	*	Art.-No.
<b>Installation services</b>			
Installation	and set up of unit at operating location, connect to existing connections	13, 18	DL10-0100 DL10-0200
Instruction	unit function instructions for operation and programming of the controller	18	DL10-0500
<b>Preventive maintenance</b>			
Preventive maintenance	Executive of equipment inspection according to maintenance plan	14, 18	DL20-0400
<b>Calibration services</b>			
Calibration digital pressure display	including certificate, measurement at specified pressure, range 20 – 900 mbar	14, 16, 17, 18	DL32-0000
Calibration temperature incl. certificate	including certificate, one measuring point in center of chamber at specified temperature	14, 16, 17, 18	DL30-0101 DL30-0201
Temperature measurement 15 measuring points	including certificate, 15 measuring points at specified temperature	14, 16, 17, 18	DL30-0218
Temperature measurement 9 measuring points	including certificate, 9 measuring points at specified temperature	14, 16, 17, 18	DL30-0109 DL30-0209
<b>Validation services</b>			
Execution of IQ/OQ	in accordance with qualification folder	15, 18, 20	DL42-0300
Execution of IQ/OQ/PQ	in accordance with customer's requirement, price: on request	15, 18	DL44-0500
Qualification folder IQ/OQ	supporting documents for validation performed by customer, consisting of: IQ/OQ checklists, unit schematics, QM certificate in accordance with ISO 9001	15, 18, 20	8012-0859

\* Notes › See last page

Designation	Description	*	Art.-No.
Qualification folder IQ/OQ/PQ	supporting documents for validation performed by customer, in accordance with customer's requirement, extension of Qualification folder IQ/OQ by chapter PQ	15, 18	8012-0948
<b>Warranty service</b>			
Extension of the warranty from 2 to 3 years	beginning with the date of delivery, wearing parts are not included	-	DL00-8041
Extension of the warranty from 2 to 5 years	beginning with the date of delivery, wearing parts are not included	-	DL00-8042

\* Notes › See last page

## 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 Heat resistant only to max. 200 °C.
- 04 Only available on units rated for 230 V.
- 06 Heating-up time may increase as a result of the lower heat conductivity.
- 07 The additional heat input may affect the temperature behavior.
- 09 Not in conjunction with the optional access port, door with window and interior lighting.
- 10 Not available on 23-liter units.
- 11 Not available on 23- or 53-liter units.
- 12 Only available on units rated for 230 V or 400 V.
- 13 Installation and connections take place at unit location; transport within the company only upon consultation.
- 14 We recommend a BINDER service contract to cover unit inspections, calibrations and validations.
- 15 OQ according to Yellow Paper = completed factory validation documentation of all OQ checklists.
- 16 Sensor calibration is performed in an accredited calibration laboratory.
- 17 Calibration is performed according to the BINDER factory standard.
- 18 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).
- 19 For additional accessories, refer to the Process documentation chapter.
- 20 When ordering IQ/OQ qualification folders and associated IQ/OQ execution on one order, we offer a 15 % discount for the item of the IQ/OQ folder.  
When ordering IQ/OQ/PQ qualification folders and associated IQ/OQ/PQ execution on one order, we offer a 15 % discount for the item of the IQ/OQ/PQ folder.