

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 inhouse 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	ArtNo.
Model VD 23					
	200230 V 1~ 50/60 Hz -6,3 A	CEE 7/7	Standard	VD023-230V	9630-0001
24	100120 V 1~ 50/60 Hz -10,0 A	NEMA 5-15	Standard	VD023UL-120V	9630-0005



TECHNICAL DATA

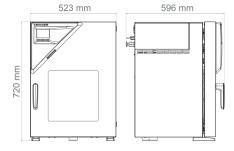
Action Humbher \$690 com \$690 com Option model Sandard Sandard Performance Duta Temperature 1970 Above arbient temperature to 220°C 1970 Above arbient temperature to 220°C Temperature uniformity on ton'C 50.4 K 50.4 K Herefore path fluctuation at 100°C 60.7 M 60.7 M Herefore path fluctuation at 100°C 60.7 M 60.7 M Herefore path fluctuation at 100°C 60.7 M 60.7 M Vaccurs Data 70.00 M 60.7 M Reservation fluctuation at 100°C 60.7 M 60.7 M Reservation fluctuation 200.00 M 60.7 M Reservation fluctuation 50.60 M 70.00 M Reservation fluctuation 60.8 M 60.00 M Nomed fluctuation with small flurge 60.00 M 60.00 M Compessed at connection with small flurge 60.00 M 60.00 M Compessed at connection for pressure excassistion 5.00 M 60.00 M Diversions and weight 60.00 M 60.00 M Exception for the unit (complete) 60.00 M 60.00 M Diversions a	TECHNICAL DATA		
Antice Number	Data		
Description model Scandad Scandad Performance Data Temperature Temperature anage 49 °C above ambient temperature to 220 °C Temperature anage 40 °C above ambient temperature to 220 °C Temperature anage 40 °C above ambient temperature to 220 °C Temperature anage 40 °C above ambient temperature to 220 °C Temperature anage 40 °C above ambient temperature to 220 °C Temperature anage 40 °C above ambient temperature to 220 °C Temperature anage 80 min 80 min Vacuum Data 80 min 80 min Vacuum Data 70 min 90 min Beatrical data 200 230 °V 100 230 °V Beatrical data 200 230 °V 100 230 °V Brown Required 6,3 °A 90 °AV Brown Required 6,3 °A 90 °AV Brown Required 100 °C min 100 °C min Brown Required (Above) 100 °C min 100 °C min Brown Required (Above) 100 °C min 100 °C min Brown Required (Above) 100 °C min 100 °C min	Designation	VD023-230V	VD023UL-120V
Professionane Distribution 10 C Alone antibuti Imperature (220°C) 10 C Alone antibut	Article Number	9630-0001	9630-0005
Temperature onege 1-9 °C above ambient temperature to 220 °C 1-9 °C above ambient temperature to 220 °C Temperature uniformity at 200°C 0.4 K 1.0 4 K Temperature fluctuation at 100°C 0.1 1 K 0.1 1 K Heating up time to 200°C 20 bor /n 20 min Vectors Obstructure Vectors Obstructure Bestrical date Description of 200°C Post Pequancy 200°C 390°V 200°C 320°V Post Pequancy 50.96 bit 2 200°C 300°C Post Pequancy 69.80°C 29.80°C Post Pequancy 69.80°C 29.80°C Post Requestion 69.80°C 29.80°C Post Requestion 69.80°C 20.90°C Post Requestion	Option model	Standard	Standard
Temperature uniformity at 100°C 10 ± K 10 ± K Itemperature functivation at 100°C 30 ± K 0.1 ± K Heading up time to 100°C 80 min 80 min Vectors between the total confect of the total co	Performance Data Temperature		
Temperature fluctuation at 100°C	Temperature range	+9 °C above ambient temperature to 220 °C	+9 °C above ambient temperature to 220 °C
Interting up thire to 100°C. So min So min Vacuum Data Use Carde Oct Data/h Oct Data/h Electrical data Use Carde Use Carde Power frequency 50% Oct 12 50% Oct 12 </td <td>Temperature uniformity at 100°C</td> <td>1.0 ± K</td> <td>1.0 ± K</td>	Temperature uniformity at 100°C	1.0 ± K	1.0 ± K
Vacuum Data Electrical Gates 0,01 bat/fh 0,01 bat/fh Electrical Gates 200—230 V 100—120 V Power frequency 50/60 Hz 100—120 V Power frequency 6,9 kW n.9 kW Unit fuse 6,3 A 100 A Phase (Normal Voltage) 1 — 1 1— 1 Connections	Temperature fluctuation at 100°C	0.1 ± K	0.1 ± K
Leckrate o.ox bar/h co.ox bar/h Electrical data Concept frequency 200_230 V 100_120 V Power frequency 50/60 Hz 50/60 Hz 50/60 Hz Nominal power 0.9 kW 0.9 kW 10,0 A Phase (Naminal voltage) 1-2 1-2 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 3 NW 5 NW Dimensions and weights Interior volume 24 L 24 L Net weight of the unit tempty) 64 kg 64 kg Load per tack 20 kg 20 kg Wall clearance back 300 mm 100 mm Wall clearance back 20 mm 70 mm Would clearance sidewise	Heating up time to 100°C	8o min	8o min
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- - 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 Uniterior volume 24 L 24 L Net weight of the unit (empty) 64 kg 64 kg Permitted load 50 kg 50 kg Wall clearance back 100 mm 100 mm Wall clearance sidewise 70 mm 70 mm	Vacuum Data		
Rated Voltage 200230 V 100120 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 24 L 4 L Net weight of the unit (empty) 64 kg 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	Leckrate	0,01 bar/h	0,01 bar/h
Power frequency 50/60 Hz Nominal power Out fluse Out	Electrical data		
Nominal power 0,9 kW 0,9 kW 10,0 A 10	Rated Voltage	200230 V	100120 V
Unit fuse 6,3 A 10,0 A 1-1 Phase (Nominal voltage) 1-1 Vacuum connections Vacuum connection with small flange 16 DN mm 16 DN mm Aleasuring 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 Wall clearance back 100 mm Wall clearance back 100 mm Wall clearance sidewise 70 mm To mm Housing dimensions not incl. fittings and connections	Power frequency	50/60 Hz	50/60 Hz
Phase (Nominal voltage) 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1	Nominal power	0,9 kW	0,9 kW
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 Net weight of the unit (empty) 64 kg 64 kg Permitted load 50 kg Wall clearance back 100 mm 100 mm Wall clearance sidewise 70 mm To mm Housing dimensions not incl. fittings and connections	Unit fuse	6,3 A	10,0 A
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 MW 5 MW 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	Phase (Nominal voltage)	1~	1~
Measuring access port with small flange 16 DN mm 16 DN mm 5 NW	Connections		
Compressed air connection for pressure-encapsulation 5 NW 5 NW Dimensions and weights Interior volume 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	Vacuum connection with small flange	16 DN mm	16 DN mm
Dimensions and weights Interior volume 24 L Act 24 L Act 364 kg 64 kg Load per rack 20 kg 20 kg Permitted load 50 kg Wall clearance back 100 mm 70 mm Housing dimensions not incl. fittings and connections	Measuring access port with small flange	16 DN mm	16 DN mm
Interior volume 24 L Net weight of the unit (empty) 64 kg 64 kg Load per rack 20 kg Permitted load 50 kg Wall clearance back 100 mm Wall clearance sidewise 70 mm To mm To mm Housing dimensions not incl. fittings and connections	Compressed air connection for pressure-encapsulation	5 NW	5 NW
Net weight of the unit (empty) 64 kg 64 kg Load per rack 20 kg Permitted load 50 kg Wall clearance back 100 mm 70 mm Housing dimensions not incl. fittings and connections	Dimensions and weights		
Load per rack Permitted load So kg Wall clearance back Wall clearance sidewise 70 mm Too mm Too mm Too mm Too mm	Interior volume	24 L	24 L
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	Net weight of the unit (empty)	64 kg	64 kg
Wall clearance back 100 mm 100 mm 70 mm Wall clearance sidewise 70 mm 70 mm Housing dimensions not incl. fittings and connections	Load per rack	20 kg	20 kg
Wall clearance sidewise 70 mm 70 mm Housing dimensions not incl. fittings and connections	Permitted load	50 kg	50 kg
Housing dimensions not incl. fittings and connections	Wall clearance back	100 mm	100 mm
	Wall clearance sidewise	70 mm	70 mm
Width net 523 mm 523 mm	Housing dimensions not incl. fittings and connections		
	Width net	523 mm	523 mm



698 mm	698 mm
413 mm	413 mm
285 mm	285 mm
285 mm	285 mm
295 mm	295 mm
1	1
40 dB(A)	40 dB(A)
140 Wh/h	140 Wh/h
1/4	1/4
	413 mm 285 mm 295 mm 1 40 dB(A) 140 Wh/h

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	*	ArtNo.
Additional universal ventilation	Additional universal connection for ventilation with ambient air or inert gas. Flow limiter thread (RP"), 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 of the pressure display to a specified value, including certificate	•	-	8012-2021
Calibration certificate, pressure	Extension of the calibration of the pressure display by another pressure value, including certificate	•	-	8012-2022
Calibration certificate, temperature	for temperature, measurement in center of chamber at specified temperature	•	-	8012-1145



Designation	Description	VD 23	*	ArtNo.
	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	*	ArtNo.
	for simple logging and documentation requirements with up to 5 networked units.			
APT-COM™ 4 BASIC-Edition	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
Expansion racks	aluminum	•	-	8012-2055
	stainless steel	•	-	8012-2259
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	•	-	8012-2250
Pump chamber with VAP 1 vacuum pump	Pump chamber for vacuum pumps, with switchable power socket. Chemical membrane pump with a nominal air flow of 2.0 m³/hour, final pressure 7 mbar			
	120 V / 50-60 Hz option model	•	-	8012-1961
	230 V / 50-60 Hz option model	•	-	8012-1958
Pump chamber with VAP 2.1 vacuum pump	Pump chamber for vacuum pumps, with switchable power socket. Chemical membrane pump with a nominal air flow of 4.0 m³/hour, final pressure 2,0 mbar			



Designation	Description	VD 23	*	ArtNo.
	120 V / 50–60 Hz option model	•	-	8012-1967
	230 V / 50-60 Hz option model	•	-	8012-1964
	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, ${\rm CO_2}$, ${\rm O_2}$ – or pressure, depending on unit			
	Digital in PDF format	•	-	7057-0005
Qualification documents	Hard copy inside folder	•	-	7007-0005
qualification documents	IQ/OQ documents – supporting documents for validation performed by customers, consisting of: IQ/OQ checklists incl. calibration guide and comprehensive unit documentation; parameters: temperature, ${\rm CO_2}$, ${\rm O_2}$, pressure, depending on unit			
	Digital in PDF format	•	-	7057-0001
	Hard copy inside folder	•	-	7007-0001
Vacuum pump connection kit	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
	Chemical membrane pump with a nominal air flow of 2.0 m³/hour, final pressure 7 mbar			
/acuum pump VAP 1	120 V / 50-60 Hz option model	•	-	5013-0223
	230 V / 50-60 Hz option model	•	-	5013-0217
/acuum pump VAP 2	Chemical membrane pump with a nominal air flow of 4.0 m³/hour, final pressure 1,8 mbar			
vacuum pump var 2	120 V / 50-60 Hz option model	•	-	5013-0219
Wasuum numn VAD a 4	Chemical membrane pump with a nominal air flow of 4.0 m³/hour, final pressure < 2 mbar			
/acuum pump VAP 2.1	230 V / 50-60 Hz option model	•	-	5013-0249

SERVICES

Designation	Description	*	ArtNo.			
Calibration services	Calibration services					
	Calibration of one (1) test temperature specified by the user in center of chamber, including certificate	-	DL30-0160			
Calibration certificate, temperature	Extension of calibration of one (1) additional test temperature specified by the user in the center of the usable space, including certificate	-	DL30-0102			
	Digital pressure display calibration at a specified test pressure of 20–900 mbar, including certificate	-	DL30-0410			
Pressure calibration	Expansion – Digital pressure display calibration at a specified test pressure of 20–900 mbar, including certificate	-	DL30-0411			
Temperature measurement, 9 measuring points	Temperature measurement with 9 measuring points with a set value specified by the user, including certificate	_	DL30-0109			



Designation	Description	*	ArtNo.
Temperature measurement, 15 measuring points	Temperature measurement with 15 measuring points with a set value specified by the user, including certificate	-	DL30-0218
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)	-	DL10-0120
Unit instructions	Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming	-	DL10-0510
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	-	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 test temperature specified by the user in the center of the usable space, including certificate	-	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	-	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	-	DL20-0615
VAP 1 vacuum pump maintenance	Maintenance service of the VAP 1 vacuum pump according to the maintenance schedule, visual inspection, replacement of the diaphragms, O-rings and seals, (Service Kit 8500-0158 included in the scope of services) as well as final functional test.	-	DL20-0410
VAP 2 vacuum pump maintenance	Maintenance service of the VAP 2 vacuum pump according to the maintenance schedule, visual inspection, replacement of the diaphragms, O-rings and seals, (Service Kit 8500-0159 included in the scope of services) as well as final functional test.	-	DL20-0420
Validation services			
Execution of IQ/OQ	Execution of IQ/OQ in accordance with qualification folder	-	DL42-0310
Execution of IQ/OQ/PQ	Execution of IQ/OQ/PQ in accordance with qualification folder	-	DL44-0500
Warranty service			
1-year warranty extension	The warranty is extended by 1 year from the delivery date, wear parts are excluded	_	DL50-0020



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