

Vacuum drying oven for non-flammable solvents

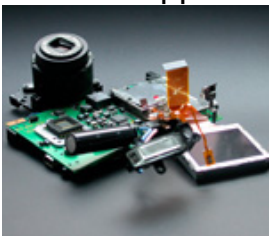
A BINDER vacuum drying oven of the VD series is impressive while gently drying with its homogeneous temperature distribution. The patented expansion shelf technology from BINDER ensures optimal heat transfer. The shelves are easy to position where required and the inner chamber of the vacuum drying oven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



Advantages:

- Maximum occupational safety with one-of-a-kind safety concept
- Fast, condensation-free drying processes
- Homogeneous specimen drying

Areas of application:



Electronics / Semiconductor Industry



Plastics Industry



Pharmaceuticals Industry

Features	Customer benefits	Characteristics
APT.line™	<ul style="list-style-type: none"> • Gentle drying throughout the chamber interior • Absolute temperature uniformity • Direct transfer of heat to the specimens • Reproducible drying results 	APT.line™ preheating chamber technology <ul style="list-style-type: none"> • Thermal conducting plates for homogeneous temperature distribution • Condensation-free inner chamber • Patented, flexible positioning of the expansion racks with large contact surfaces
Drying	<ul style="list-style-type: none"> • Fast drying thanks to accelerated drying process • Light specimens (e.g. powder) are not swirled 	BINDER Cross-Flow Principle <ul style="list-style-type: none"> • Even flow throughout the inner chamber from bottom to top • Finely adjustable valve without turbulence, individually controlled
Safety concept	<ul style="list-style-type: none"> • Maximum occupational safety with recognized safety concept • Protection for user and laboratory 	Tested security <ul style="list-style-type: none"> • Spring-mounted safety glass panel with shatter protection (FDA tested) • Standard interior flushing with inert gas • Electronic components are decoupled from the inner chamber
Cleaning	<ul style="list-style-type: none"> • Simple, time-saving cleaning • Durable materials 	Smooth inner chamber with rounded corners <ul style="list-style-type: none"> • Fixtures are fully removable • Inner chamber made of highly corrosion resistant stainless steel V4A (1.4571)
Complete system	<ul style="list-style-type: none"> • Everything from one source • Optimal working height • 50% less noise • Pressure and temperature profiles are depicted simultaneously 	Coordinated, modular system <ul style="list-style-type: none"> • Contains vacuum drying chamber, vacuum pumps, module and connection kit for various sizes • Application-specific vacuum pumps (standard membrane pump, speed-controlled membrane pump)
Accessories and Services	<ul style="list-style-type: none"> • Convenient documentation and validation • BINDER INDIVIDUAL for customer-specific solutions • Worldwide BINDER Service 	Comprehensive product portfolio <ul style="list-style-type: none"> • Years of proven and recognized validation and documentation materials • Various options: Digital pressure indicator, object temperature indicator • Vacuum pump and chamber controllable using FDA-compliant software APT-COM™ • Worldwide service network

- Electronically controlled APT.line™ preheating chamber with 2 expansion racks assuring temperature accuracy and reproducible results
- Temperature range from 15 °C above ambient temperature to 200 °C
- MP controller with 2 programs with 10 sections each or switchable to 1 program with 20 sections
- Integrated weekly program timer with real-time function
- Digital temperature setting with an accuracy of one degree
- Elapsed time indicator
- Precision-adjustable ventilation valve
- Precision-adjustable inert gas valve with Cross-Flow-Technology
- All electrical components are decoupled from the inner 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 in rear panel
- Analog pressure gauge (displays pressure difference between the inner chamber and 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 contacts in the program editor
- RS 422 interface for communication software APT-COM™ DataControlSystem
- 2 patented, flexible aluminum expansion racks
- Also available as complete system with module and vacuum pump. Features:
- Reduced noise level
- Practical working height
- Coordinated system
- BINDER test confirmation

VD 53

▶ Exterior dimensions	
Width (mm)	635
Height (incl. feet) (mm)	775
Height with optional vacuum module (mm)	625
Height with optional vacuum module (mm)	1400
Depth (mm)	550
Plus door handle, connection (mm)	100
Wall clearance, rear (mm)	100
Wall clearance, side (mm)	135

▶ Interior dimensions	
Width (mm)	400
Height (mm)	400
Depth (mm)	330
Interior volume (l)	53
Expansion racks (aluminum) (number standard/max.)	2 / 5
Distance between the racks (mm)	62
Usable space per rack (width x depth) (mm)	349 x 320
Load per shelf (kg)	20
Permitted total load (kg)	45
Weight (empty) (kg)	95

▶ Temperature range	
Temperature range approx. 15 °C above ambient temperature to (°C)	200
Temperature variation 1)	
100 °C (± K)	2
200 °C (± K)	4,5
Temperature fluctuation (± K) 1)	0,1
Warm-up time 1), 2)	
to 100 °C (min.)	80
to 200 °C (min.)	115
Vacuum connection with small flange (DN mm)	16
Measuring access port with small flange (DN mm)	16
Inert gas connection with flow limiter thread (RP)	3 / 8

Permitted end vacuum (mbar)	0,01
Leak rate (max. bar 1/h)	0,01

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▶ Electrical data	
IP protection class acc. to EN 60529	IP 20
Voltage ($\pm 10\%$) 50 / 60 Hz	230
Nominal power (kW)	1,2
Energy consumption	
at 100 °C (W)	150
at 200 °C (W)	445

1) Value with aluminum racks

2) 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 line voltage fluctuation of $\pm 10\%$. These average values have been determined according to the BINDER factory standard, respecting the recommended wall clearances of 10% of the height, width and depth of the inner chamber. Differing ambient temperatures and production-related device-specific variances can lead to varying technical data.

Therefore, we recommend individual customer-specific calibration or validation for applications on the limit of the permitted ambient temperature range.

**Measuring port**

Vacuum-tight access port into the device for measuring lines (9-pin).

**Specimen temperature display**

Uses PT 100 sensor and digital temperature display.

**Calibration certificate**

Measurement in center at predefined test value. Expandable with additional measuring points or test values based on your requirements.

VD 53

Connection kit consists of: clamping ring, aluminum centering ring, small flange with hose nozzle, 2.5 m rubber hose, and 2 hose clamps	<input type="radio"/>
Measuring port for vacuum-tight access port of measuring lines into the device (9-pin)	<input type="radio"/>
Factory calibration certificate, measurement in center of chamber at 100 °C or at specified testing temperature	<input type="radio"/>
Extension to factory calibration certificate. Each additional measurement at additional measuring point or testing temperature	<input type="radio"/>
Factory calibration certificate for digital pressure gauge. Measurement at 100 mbar or at specified test pressure (range 20-900 mbar)	<input type="radio"/>
Extension to factory calibration certificate for digital pressure gauge. Each additional measurement with additional test pressure (range 20-900 mbar)	<input type="radio"/>
Temperature measurement of the specimen with flexible PT 100 sensor and digital specimen temperature display	<input type="radio"/>
Factory calibration certificate for digital specimen temperature display. Measurement at 100 °C or at specified testing temperature	<input type="radio"/>
VP 1.1 chemical membrane pump (nominal air flow 2.0 m ³ /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 ³ /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 ³ /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 are replaced	<input type="radio"/>
Door gasket, FKM (Viton)	<input type="radio"/>
Digital pressure display, measuring range 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 1.1 (nominal air flow 2.0 m ³ /hour, final pressure 7 mbar), with separator and emission condenser, including all necessary vacuum connection parts 230 V 1N ~ 50 / 60 Hz	<input type="radio"/>
Vacuum module with chemical membrane pump VP 2.1 (nominal air flow 3.4 m ³ /hour, final pressure 7 mbar), with separator and emission condenser, including all necessary vacuum connection parts 230 V 1N ~ 50 / 60 Hz	<input type="radio"/>
Vacuum module with speed-controlled chemical membrane pump VP 3.1 (nominal air flow 4.6 m ³ /hour, final pressure 1.5 mbar), with separator and emission condenser, including all necessary vacuum connection parts, as well as digital vacuum controller (measuring precision ≤1 mbar) 230 V 1N ~ 50 / 60 Hz	<input type="radio"/>