



# BINDER Vacuum drying ovens VD | VDL

VACUUM DRYING OVENS VD | VDL SERIES

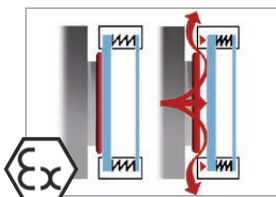
# ABSOLUTELY RELIABLE DRYING

Both VD and VDL ovens can dry samples completely without residues, scaling or oxidation, and this is achieved in overdrive. Depending on your individual safety requirements, our unique safety concept sets a new standard and is combined with a first-rate performance and quality.



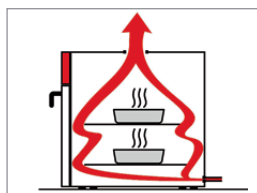
## GENTLE DRYING PROCESS

- ▶ Gentle drying throughout the chamber interior
- ▶ Direct heat transfer through large thermal conducting plates
- ▶ Patented, flexible positioning of the expansion racks



## BINDER SAFETY CONCEPT

- ▶ Ex classification of the inner chamber according to ATEX Directive 94/9/EC: II -3G IIB T3-T1 Gc X
- ▶ Spring-mounted safety glass panel with shatter protection
- ▶ Standard inert gas connection for interior flushing
- ▶ Electronic components are decoupled from the inner chamber



## ACCELERATED DRYING PROCESS

- ▶ BINDER Cross-Flow Principle
- ▶ Even flow throughout the inner chamber from bottom to top
- ▶ Finely adjustable inert gas valve without turbulence for lighter samples
- ▶ Individually controlled



## EASY TO CLEAN

- ▶ Smooth inner chamber with rounded corners
- ▶ Inner chamber and all connections made of highly corrosion resistant stainless steel V4A
- ▶ Fixtures are fully removable



## VD SERIES

### VACUUM DRYING OVENS FOR NON-FLAMMABLE SOLVENTS

#### STANDARD EQUIPMENT

- ▶ Program Controller
- ▶ Inert gas valve with Cross-Flow Technology
- ▶ Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm
- ▶ Analog pressure gauge
- ▶ Micro-polished inner chamber, suction and ventilation tubes, pressure container, expansion racks and ball valve are made of highly corrosion resistant stainless steel V4A
- ▶ Door gasket made of tempered silicone
- ▶ RS 422 interface for APT-COM™ DataControlSystem communication software
- ▶ Two patented aluminum expansion racks with flexible positioning
- ▶ Integrated weekly program timer with real-time function
- ▶ Two x 24 V DC (max 0.4 A) switching outputs, switched via two control contacts in the program editor

#### Safety concept:

- ▶ Spring-mounted safety glass panel with shatter protection
- ▶ Inertgas connection for interior flushing

## VDL SERIES

### SAFETY VACUUM DRYING OVENS FOR FLAMMABLE SOLVENTS

#### STANDARD EQUIPMENT

- ▶ Program Controller
- ▶ Inert gas valve with Cross-Flow Technology
- ▶ Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm
- ▶ Analog pressure gauge
- ▶ Micro-polished inner chamber, suction and ventilation tubes, pressure container, expansion racks and ball valve are made of highly corrosion resistant stainless steel V4A
- ▶ Door gasket made of tempered silicone
- ▶ RS 422 interface for APT-COM™ DataControlSystem communication software
- ▶ Two patented aluminum expansion racks with flexible positioning
- ▶ Integrated weekly program timer with real-time function

#### Extended safety concept:

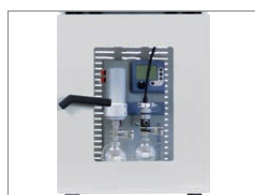
- ▶ Spring-mounted safety glass panel with shatter protection
- ▶ Inertgas connection for interior flushing
- ▶ Pressure control device for heating activated < 125 mbar
- ▶ Over pressure capsuled instrument panel with compressed air connection and maintenance unit
- ▶ Flame protection gasket
- ▶ ATEX Directive 94/9/EC: II -3G IIB T3-T1 Gc X
  - Avoiding of explosive atmosphere
  - Avoiding of ignition source
  - Limitation of the effect of possible explosions to a harmless level

#### BINDER INDIVIDUAL



Vacuum drying oven with special racks for large numbers of particularly flat samples

#### OPTIONS



Vacuum module with chemical membrane pump



Specimen temperature display with PT 100 sensor



Measuring port

# TECHNICAL DATA

## VD | VDL SERIES

	VD 23	VD 53	VD 115	VDL 23	VDL 53	VDL 115
<b>Exterior dimensions</b>						
Width (mm)	515	635	740	515	635	740
Height (inclusive feet) (mm)	655	775	900	655	775	900
Height VD/VDL with option "vacuum module" (mm)	1280	1400	1525	1280	1400	1525
Depth (mm)	500	550	670	500	550	670
Plus door handle, connection (mm)	100	100	100	100	100	100
<b>Interior dimensions</b>						
Width (mm)	285	400	510	285	400	510
Height (mm)	285	400	510	285	400	510
Depth (mm)	295	340	460	295	340	460
Interior volume (l/cu.ft.)	23	53	115	23	53	115
Quantity of expansion racks (aluminum) (standard/max.)	2 / 4	2 / 5	2 / 6	2 / 4	2 / 5	2 / 6
Load per rack (kg/lbs.)	20	20	20	20	20	20
Permitted total load (kg/lbs.)	35	45	65	35	45	65
Weight of the unit (empty) (kg/lbs.)	63	95	153	63	95	153
<b>Temperature data</b>						
Temperature range, 15 °C above ambient up to (°C)	200	200	200	200	200	200
Temperature uniformity at 100 °C (± K) <sup>1)</sup>	1.5	2.0	3.5	1.5	2.0	3.5
Temperature fluctuation (± K) <sup>1)</sup>	0.1	0.1	0.1	0.1	0.1	0.1
Heating-up time to 100 °C (min.) <sup>1) 2)</sup>	65	80	95	65	80	95
Permitted end vacuum (mbar)	0.01	0.01	0.01	0.01	0.01	0.01
Leak rate max. (bar/h)	0.01	0.01	0.01	0.01	0.01	0.01
Compressed air connection for pressure-encapsulation (Ø mm)				8	8	8
<b>Electrical data</b>						
Housing protection acc. to EN 60529	IP 20	IP 20	IP 20	IP 54	IP 54	IP 54
Nominal voltage (±10%) 50/60 Hz (V)	115	115	115	230	230	230
Nominal power (kW)	0.8	1.2	1.9	0.8	1.2	1.9
<b>Model no.</b>	<b>9030-0035</b>	<b>9030-0036</b>	<b>9030-0037</b>	<b>9030-0038</b>	<b>9030-0039</b>	<b>9030-0040</b>

V 04\_2014 / 7002-0241; Information and technical data contained in this brochure are subject to alteration.



	Vacuum module with chemical membrane pump	Vacuum module with chemical membrane pump	Vacuum module with speed-controlled chemical membrane pump
Type	VP 1.1	VP 2.1	VP 3.1
Max. pumping speed at 50/60 Hz (m <sup>3</sup> /h)	2.0 / 2.3	3.4 / 3.8	4.6
Max. pumping speed at 50/60 Hz (cfm)	1.2 / 1.4	2.0 / 2.2	2.7
Ultimate vacuum (abs.) (mbar/torr)	7 / 5	1.5 / 1.1	1.5 / 1.1
Ultimate vacuum (abs.) with gas ballast (mbar/torr)	12 / 9	3 / 2.2	3 / 2.2
Ambient temperature range (°C)	10 – 40	10 – 40	10 – 40
Nominal voltage (50 – 60 Hz) (V)	230 / 115	230 / 115	230 / 115
Noise level at 50 Hz (dBa)	45	45	43
ATEX conformity	II 3G IIC T3 X Internal Atm. only	II 3G IIC T3 X Internal Atm. only	II 3G IIC T3 X Internal Atm. only
<b>Model no.</b>	<b>5013-0117</b>	<b>5013-0119</b>	<b>5013-0121</b>

<sup>1)</sup> values measured with aluminum racks // <sup>2)</sup> 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 voltage fluctuation of ±10 %. The temperature data are determined in accordance with factory standard following DIN 12880 respecting 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.