Chemical Membrane Pump | Model BINDER VP1

The VP1 vacuum pump, together with the VD series vacuum ovens, is ideal for drying aqueous and non-flammable solvents, as well as for other applications such as:

- Degassing
- Drying of heat- and/or oxygen-sensitive goods
- Tempering processes, under vacuum / in the absence of oxygen
- Thermal processes under protective gas
- And many other applications

Benefits

- Optimally matched for operation with BINDER VD series vacuum drying ovens
- Resistant to a wide range of chemicals
- Very quiet and low-vibration operation
- Designed for S1 operating mode (continuous operation)
- Suction and pressure-side separators for collecting condensate

Important Features

- Maximum pumping speed at 230V/50Hz: 2,0 m^3/h
- Ultimate vacuum without gas ballast: 7 mbar[1]
- Ultimate vacuum with gas ballast: 12 mbar[2]
- Maximum rated current at 200-230 V~ 50/60Hz: 1,8 A
- Power connection via country-specific IEC plug, length: 2 m
- Scope of delivery: Pumping station fully assembled, ready for operation, with instructions

Order Information:

Art. No.	Article	Description
5013-0256	Pump stand VP1	Chemical membrane pump
8012-2613	Connection kit VD VP1-VP2	Connecting VP1 to vacuum ovens of series VD
8012-2615	Emission condenser[3] VP1-VP2	Mounting kit with output-side emission condenser
8500-0536	Service kit VP1[4]	Wear parts set, consisting of membranes, valves, and seals
8500-0542	Membrane wrench SW 66	Special tool for replacing the membranes
The VP1 pump can also be ordered as a set with a pump cabinet and connection kit, see page 5.		

1 The final vacuum of the entire system consisting of vacuum pump and vacuum oven is usually about 1-3 mbar above the ultimate vacuum of the pump alone

2 When drying larger quantities of liquid (> 100 ml), the use of gas ballast is recommended

3 Recommended if condensate is to be collected completely or to minimize the evaporation of malodorous or toxic components

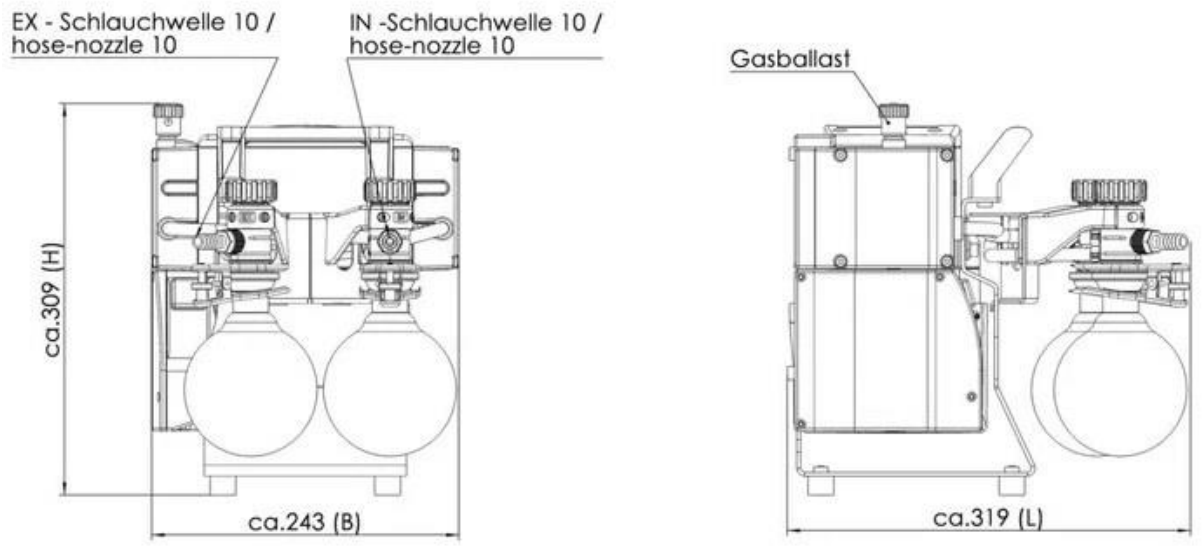
4 It is recommended to replace the wearing parts after 15000 operating hours, which corresponds to 1,7 years of continuous operation.

Technical Data

Type	Unit	BINDER VP1
Maximum pumping speed 50/60 Hz according to ISO 21360	m^3/h	2,0 / 2,3
Final vacuum without gas ballast (absolute)	mbar	7
Final vacuum witht gas ballast (absolute)	mbar	12
Maximum permissible pressure at the inlet (absolute)	bar	1,1
Maximum permissible pressure at the outlet (absolut)	bar	1,1
Maximum permissible differential pressure between inlet and outlet	bar	1,1
Maximum permissible pressure on the gas ballast	bar	1,2
Permissible ambient temperature during storage	°C	-10 to +60
Permissible ambient temperature during operation	°C	+10 to +40
Permissible relative ambient humidity during operation (non-condensing)	%	30 to 85
Maximum installation height	m	2000 NN
Rated power	kW	0,18
Idle speed 50 / 60 Hz	1/min	1500 / 1800
Switchable wide-range motor [5]		100-115 V~ 50/60 Hz 120 V~ 60 Hz 200-230 V~ 50/60 Hz
Maximum rated current at: 100-115 V~ 50/60 Hz 120 V~ 60 Hz 200-230 V~ 50/60 Hz	A A A	3,4 2,9 1,8
Device fuse	A	6.3 inert
Motor protection[6]	thermal winding protection, self-holding	
Power plug	Country specific cold device plug , 2 meter length	
Overvoltage category		II
Protection class according to IEC 60529		IP 40
Protection class according to UL 50E		Typ 1
Degree of contamination		2
Inlet	mm	hose nozzle DN 10
Outlet	mm	hose nozzle DN 10
Volume Round-bottom flasks	ml	500
Emission sound pressure level [7]	db(A)	45
Dimensions L x W x H ca	mm	319 x 243 x 309
Weight ready for use approximately	kg	13,6
Gas intake temperature: continuous operation, gas load >100 mbar	°C	+10 to +40
Gas intake temperature: continuous operation, gas load <100 mbar	°C	0 to +60
Gas intake temperature: shor (5 min) operation, gas load <100 mbar	°C	-10 to +80
Technical Data Emission Condenser (optional accessory)		
Coolant connections	mm	hose nozzle DN 6-8
Maximum permissible pressure of the cooling medium	bar	6 (absolute)
Permissible range of coolant temperature	°C	-15 to +20

5 Maximum permissible supply voltage range (±10%). Caution: Observe the type plate information!
6 For supply voltages below 115 V, the self-holding of the winding protection may be limited
7 Measurement at final vacuum at 230 V / 50 Hz according to EN ISO 2151:2004 and EN ISO 3744:1995 with exhaust hose at the outlet

Drawing

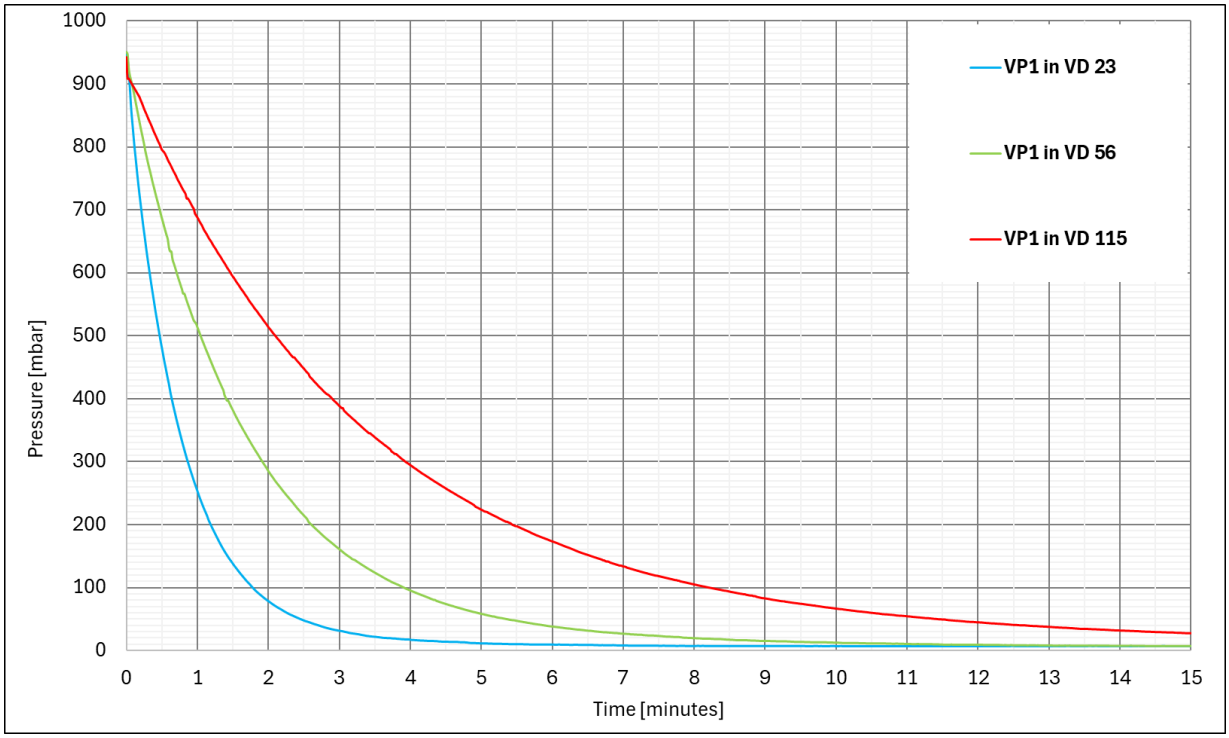


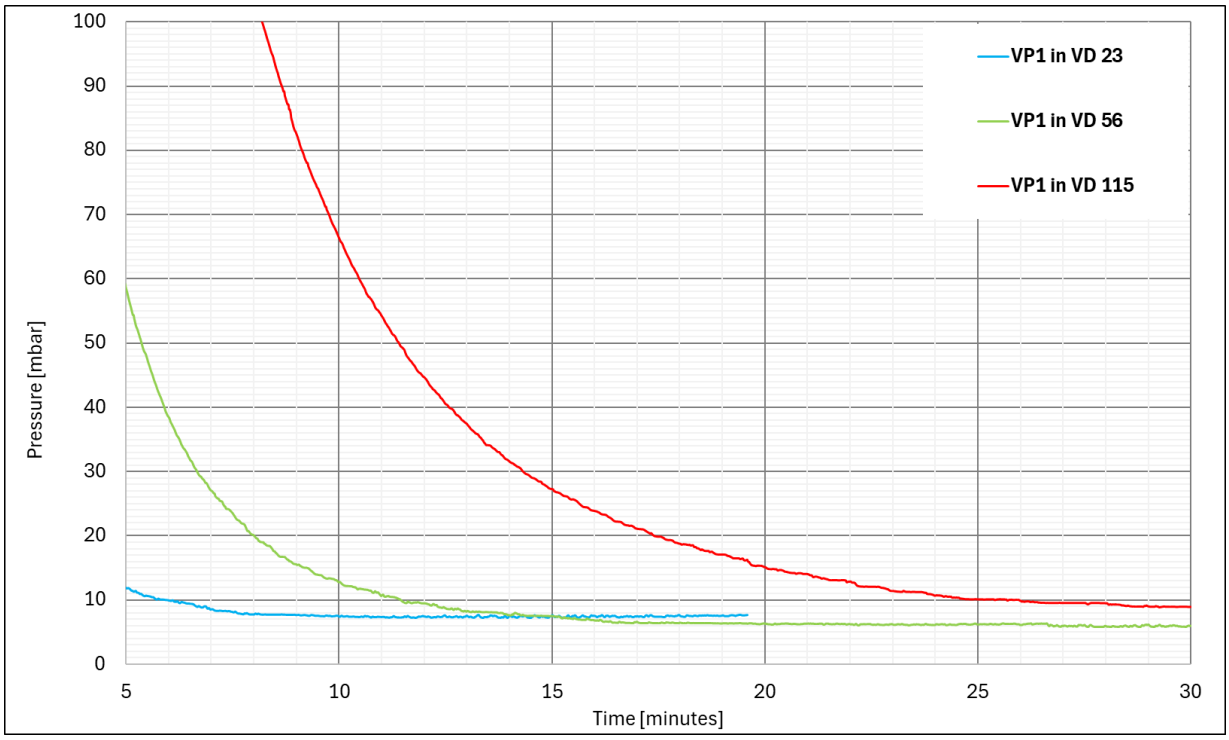
All dimensions in mm

List of Materials in Contact with Medium

Component	Material
Head cover	ETFE carbon fiber reinforced
Membrane clamping disc	ETFE carbon fiber reinforced
Membranes	PTFE
Valves	FFKM
O-rings	FPM
Valve island	ECTFE carbon fiber reinforced
Gas ballast tubing	PTFE carbon fiber reinforced
Inlet (hose shaft)	PP
Outlet (hose shaft)	PP
Outlet emission condenser (optional accessory)	PET
Tubing	PTFE
distributor head	PPS glass fiber reinforced
Blanking plate	PP
O-ring at collection flask	Fluorelastomer
Round flasks / emission condenser (optional accessory)	Borosilicate glass
Pressure relief valve on the emission condenser (optional accessory)	PTFE / silicone rubber

Pump-Down Charts of VP1 with Vacuum Ovens of Series VD

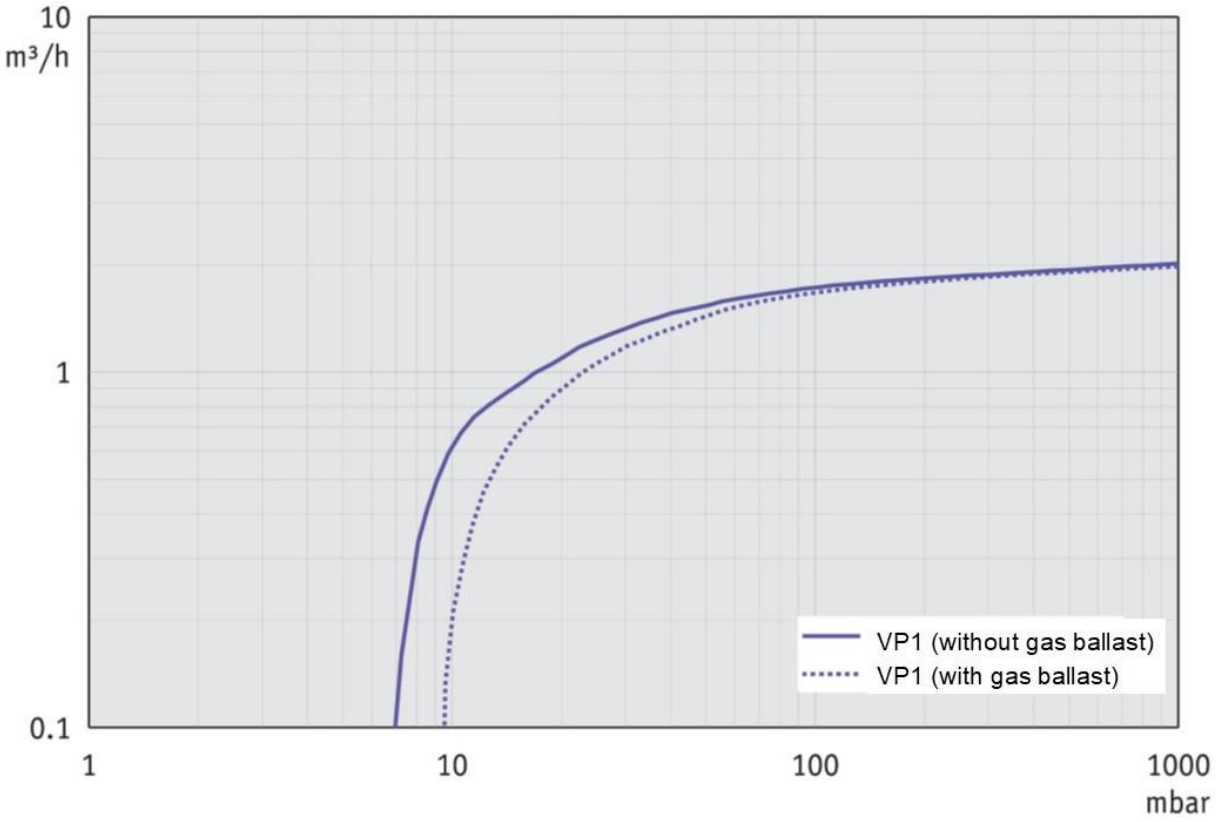




Note:

- curves relate to pump-down of an empty oven. When containing volatile liquid, the pressure curve will be significantly different
- temperature will affect the curves, but only to a minor effect (higher temperature → slightly faster pump-down). All curves are taken at a chamber temperature of 70°C

Pump Characteristic Curve



Shipment Data:

Freight dimensions (L x W x H in mm): 475 x 350 x 435

Shipment weight (kg): 15,9

CE Conformity:

The product is CE compliant with the regulations and directives

- 2006/42/EG
- 2014/34/EU
- 2011/65/EU, 2015/863

Set-Articles: vacuum pump VP1 with pump module (under cabinet) and connection kit

For our VD series vacuum ovens, which are available in the sizes 23 liters, 56 liters and 115 liters, we offer sets consisting of a VP1 vacuum pump, a pump cabinet (base cabinet) for accommodating the pump, and a connection kit for connecting the pump to the vacuum oven.

The pump module raises the vacuum oven to an ergonomic working height, reduces pump noise, and protects the pump from mechanical damage. The pump modules also feature a switchable socket that can be controlled via the vacuum furnace's controller.

This allows the vacuum pump to be conveniently switched on and off via the controller of the vacuum oven. Programming is also possible.

SET Articles	
Art.No.	**Description**
8012-2616	Pump module VD 023 (230V) + VP1 + connection kit
8012-2620	Pump module VD 056 (230V) + VP1 + connection kit
8012-2624	Pump module VD 115 (230V) + VP1 + connection kit

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Pricing on any accessories shown can be found by keying the part number into the search box on our website.

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct.
If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.

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Please contact us if this literature doesn't answer all your questions.