

# Vacuum in the laboratory

PRODUCTS AND SOLUTIONS

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Technology for Vacuum Systems

Vacuum filtration is frequently used for sample preparation in microbiology, waste water control and analysis. With a final vacuum of 100 mbar, 90% of atmospheric pressure is doing the work of forcing the media through the filter. For aqueous filtration, the ME 1 is the optimal choice; however, for more aggressive solvents, the ME 1C with its superior chemical resistance properties is the right solution.



## PERFORMANCE FEATURES ME 1 AND ME 1C

- 0.7 m<sup>3</sup>/h max. pumping speed, 100 mbar ultimate vacuum (abs.)
- small, robust, reliable
- easy to use
- contamination-free pumping and evacuation
- outstanding chemical resistance (ME 1C)
- exceptionally long diaphragm life

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## Tired of waiting for filtration? Let us help you speed it up.

NEW VACUUM PUMPS ME 1 AND ME 1C



Filtration is probably the most common application for vacuum in the laboratory. The new diaphragm pumps ME 1 and ME 1C offer a compact and high performance solution. With their easy-to-use functionality, they are perfect for both single and multiple filtrations. The ME 1C also offers outstanding chemical resistance.

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Vacuum requirements for rotary evaporators can vary greatly depending upon the solvent mixtures and evaporating temperature. This is the reason why modern vacuum systems include a built-in vacuum controller to help you to achieve the optimum evaporation rates. This significantly shortens the process time, is energy efficient, and minimizes the environmental impact.



## PERFORMANCE FEATURES PC 3001 VARIO

- max. pumping speed 1.7 m<sup>3</sup>/h, ultimate vacuum 2 mbar
- CVC 3000 vacuum controller with intuitive, clear text menus (14 languages), ceramic vacuum sensor and integrated venting valve
- automatic adaptation of the vacuum level throughout the entire process with high reliability and safe unattended operation
- process times up to 30 percentage shorter due to continuous automatic optimization, even with complex mixtures and large amounts of vapour
- excellent ultimate vacuum even with gas ballast
- whisper-quiet and low vibration operation
- excellent environmental friendliness due to efficient solvent recovery

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## No more boiling over.



### PC 3001 VARIO

The PC 3001 VARIO is the ultimate laboratory vacuum solution for working with many high-boiling solvents (e.g., rotary evaporation). Without the need for programming or constant monitoring, the automatic, single-point vacuum control prevents boiling retardation and foaming whilst reducing process times and increasing process safety.

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Vacuum drying chambers are often used for handling very sensitive substances when it is necessary to guarantee excellent residual drying. They typically need a very good ultimate vacuum depending upon the degree of drying needed, the maximum acceptable temperature and solvents used. In certain process conditions, large quantities of vapours may also require pump systems that offer a sufficiently high flow rate.



## PERFORMANCE FEATURES PC 3003 VARIO

- max. pumping speed 2.8 m<sup>3</sup>/h, ultimate vacuum 0.6 mbar
- CVC 3000 vacuum controller with intuitive clear text menus (14 languages), ceramic vacuum sensor and integrated venting valve
- automatic adaptation of the vacuum level throughout the entire process with high reliability and safe, unattended operation
- short process times due to automatically adapting (hysteresis-free) vacuum control
- ideal for high-boiling solvents and evaporation at low temperatures
- excellent environmental friendliness due to efficient solvent recovery

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## There's no gentler drying system.



### PC 3003 VARIO

The VARIO® diaphragm pumps and pumping units (e.g., PC 3003 VARIO) provide the optimal conditions for drying applications. The integrated, intuitive CVC 3000 vacuum controller adapts VARIO® system vacuum automatically, with hysteresis-free, single point accuracy.

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The freeze drying process requires vacuum systems with a final vacuum of up to  $10^{-3}$  mbar. The ideal solution is a two-stage rotary vane pump (different pumping speeds are available) or the special RC 6 chemistry-HYBRID™ pump. The latter pumping unit is a combination of a rotary vane pump and a chemistry diaphragm pump. The constant vacuum on the oil-chamber provided by the diaphragm pump prevents vapour condensation in the pump oil, reducing oil changes by up to 90% while the diaphragm pump remains unaffected by the chemical vapours.



## PERFORMANCE FEATURES RC 6

- max. pumping speed 5.9 m<sup>3</sup>/h, ultimate vacuum  $2 \times 10^{-3}$  mbar
- reduced internal corrosion, even when working with corrosive vapours
- significantly reduced waste oil due to extended service intervals
- excellent environmental credentials due to efficient solvent recovery when equipped with optional emissions control accessories
- most economic solution: In practical operation, often no cold trap is needed

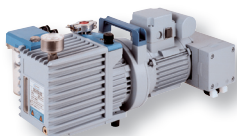


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## The perfect team for cold conditions.

### CHEMISTRY-HYBRID™ PUMP RC 6



The perfect partner for your Freeze dryer. The RC 6 is a corrosion-reducing combination of a two-stage rotary vane pump and a chemistry diaphragm pump. It offers outstanding suction power, vastly reduced service needs, and much less waste oil accumulation.

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Vacuum concentration makes many demands on the supporting vacuum system, both in terms of the ultimate vacuum and in the selection of accessories. Apart from a good chemical resistance, a high vapour tolerance is also desirable. Solvent vapour can be recovered via an emission condenser at the outlet of the pump.



## PERFORMANCE FEATURES MD 1C

- max. pumping speed 1.3 m<sup>3</sup>/h, ultimate vacuum 2 mbar
- outstanding chemical resistance and superior vapour tolerance
- exceptionally high performance even at low vacuum
- excellent ultimate vacuum even with gas ballast
- whisper-quiet and ultra-low-vibration operation
- proven long diaphragm life, maintenance-free drive system



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## Carefree spinning with your vacuum concentrator.

### CHEMISTRY DIAPHRAGM PUMP MD 1 C



Samples are concentrated without foaming and clumping by the simultaneous action of vacuum and centrifugal energy. The MD 1C pump is the compact, powerful heart of a complete family of reliable chemistry pumping units. It is the perfect partner for vacuum supply for vacuum concentration.

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In molecular-biology, biochemical and cell cultural laboratories, media aspiration is a routine task. The sample preparation is frequently complex or in very small quantities. Therefore, it is important for the media to be removed as completely as possible without the risk of damaging the sample. The professional BioChem VacuuCenter BVC 21 NT is designed precisely to facilitate this work with increased process safety.



## PERFORMANCE FEATURES BVC 21 NT

- thumb wheel control for gentle suction with even the smallest volumes
- careful and precise aspiration avoiding turbulence in the sample
- automatic, on-demand pressure monitoring
- autoclavable collection bottle with 0.2  $\mu\text{m}$  sterile filter and self-sealing quick-fit coupling
- extended filter lifetime through minimal aerosol and foam formation in the collection bottle
- powerful chemistry diaphragm pump provides simultaneous support for two users (with optional second handset and coupling)

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## Precision and sensitivity.

THE FLUID ASPIRATION SYSTEM BVC 21 NT



Precise aspiration of even the smallest micro-litre volumes via a fine control thumb wheel. Automatic on-demand vacuum - no need for hand or foot switch. Self sealing, quick-fit couplings for safe exchange of the autoclavable 4 l collection bottle with 0.2  $\mu\text{m}$  sterile filter. Simple connection facility for a second hand control offering dual user operation and therefore reducing the cost per user by 50%.

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The DCP 3000 is a convenient vacuum gauge for rough and fine vacuum with a large illuminated display. The brand new VSP 3000 vacuum sensor is based on the thermal conductivity principle (Pirani) and offers a wide measuring range from atmospheric pressure down to  $10^{-3}$  mbar. The gas contacting parts are made of chemically resistant plastics and ceramics, offering a much better chemical resistance and robustness than conventional Pirani sensors that have fragile, spiral-wound metallic filaments.

## PERFORMANCE FEATURES

- up to four gauge heads VSK 3000 (Atm. - 0.1 mbar) and four VSP 3000 (Atm. -  $10^{-3}$  mbar) can be simultaneously connected
- brand new robust VSP 3000 vacuum sensor constructed from highly chemically resistant plastics and ceramics
- wide measurement range from atmospheric pressure to fine vacuum ( $10^{-3}$  mbar)
- when used with our CVC 3000 vacuum controller and vacuum solenoid valve, the VSP 3000 gauge head can be used for vacuum control down to  $10^{-3}$  mbar

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## An amazing combination of sensitivity and toughness.

PIRANI VACUUM SENSOR VSP 3000  
AND VACUUM GAUGE DCP 3000



The VSP 3000 Pirani vacuum sensor for measuring gauges and controllers (3000 series) features a much better chemical tolerance and resistance to mechanical and pressure shock in the range from atmosphere to  $10^{-3}$  mbar. It is also splash-proof and tough enough for industrial installation applications.

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