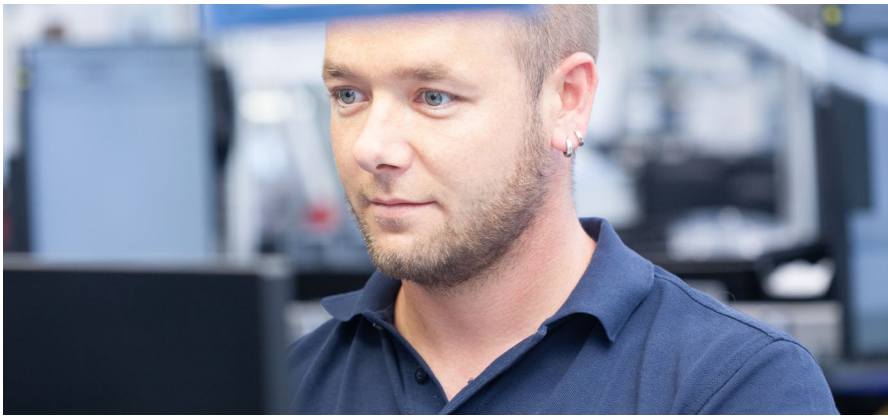
VACUUBRAND®

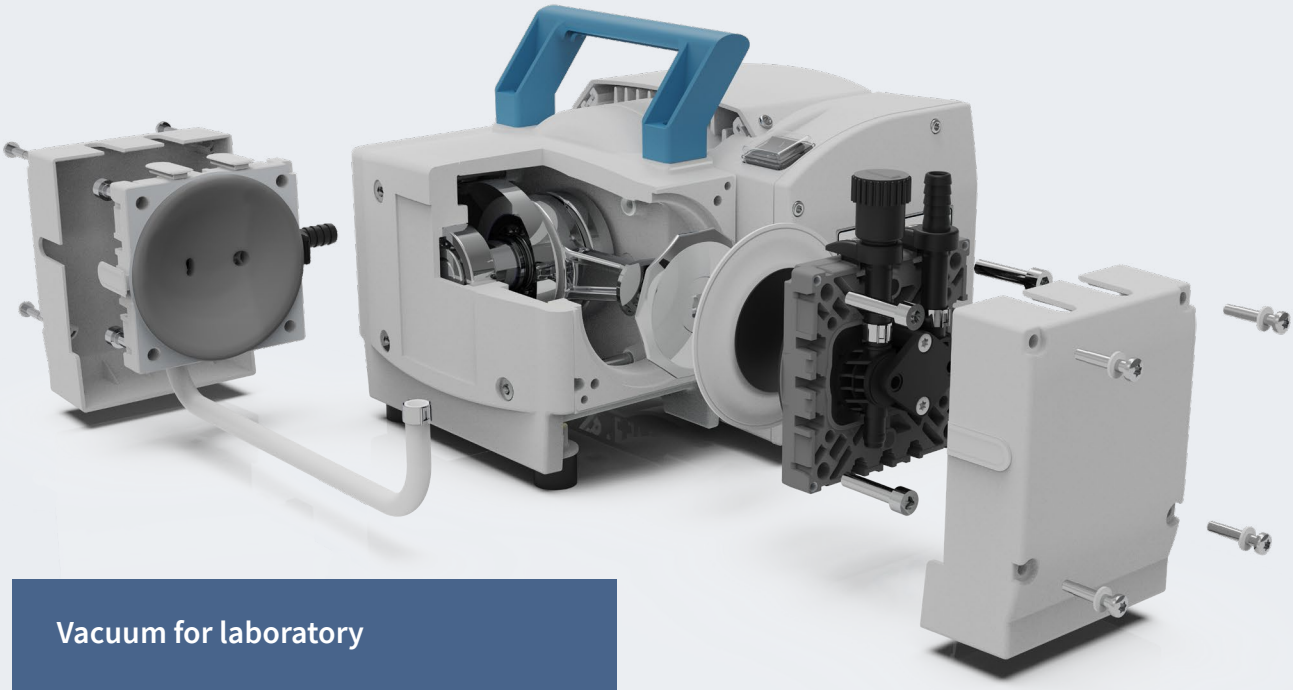


Chemistry diaphragm pumps

Oil-free, chemically resistant diaphragm pumps for pumping aggressive gases and vapors.

Unsurpassed long-term performance – even with aggressive chemicals

Chemistry diaphragm pumps



Vacuum for laboratory

- Chemically resistant
- Durable
- Efficient

Typical applications for chemistry diaphragm pumps include pumping chemically aggressive gases and vapors from equipment such as rotary evaporators, vacuum drying chambers, and many other laboratory applications. Chemistry diaphragm pumps from VACUUBRAND feature uncompromising chemistry designs. Their construction with fluoropolymers makes them very resistant to chemical vapors from inlet to exhaust. In this pump technology, pumping chambers are hermetically separated from the drive system.

It is characterized by a high level of condensate compatibility. Two-, three- and four-stage pumps additionally have a gas ballast valve for all work with condensable vapors. Diaphragm pumps are oil-free, do not consume any water, and do not generate either wastewater or contaminated oil.

Technical highlights

Chemically resistant

VACUUBRAND chemistry diaphragm pumps are uncompromisingly chemically resistant – even in the case of aggressive chemicals. All wetted parts are made of selected fluoroplastics. They are characterized by excellent chemical resistance and low material adhesion.

Durable

VACUUBRAND chemistry diaphragm pumps offer unsurpassed long-time performance – even in rough conditions. Thanks to high-quality fluoropolymers, precise manufacturing processes, and 100% quality control, VACUUBRAND chemistry diaphragm pumps guarantee uncompromising chemical resistance, long service intervals, and longstanding reliability.

Efficient

Precise, efficient and quiet – VARIO® diaphragm pumps control the vacuum according to need via the motor speed. In combination with the VACUU·SELECT controller, they achieve the optimal conditions for reproducible processes. Parameters and process steps can be easily adjusted and saved using the touch display.

Representative applications

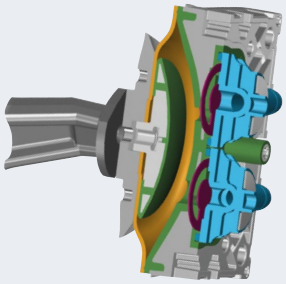
- Drying
- Rotary evaporation
- Vacuum concentration
- Filtration
- Local area vacuum networks
- Reactors & synthesis applications
- Fore vacuum generation for turbomolecular pumps

Chemically resistant and durable

VACUUBRAND chemistry diaphragm pumps are uncompromisingly chemically resistant – even in the case of aggressive chemicals. All wetted parts are made of selected fluoroplastics. They are characterized by excellent chemical resistance and low material adhesion.

VACUUBRAND chemistry diaphragm pumps stand for unrivaled years of reliability, even in harsh chemistry applications. To achieve this, we use a special diaphragm technology and carefully selected materials.
The most heavily stressed components are produced in a complex, multi-stage manufacturing process.

In this process, a stable metal core is coated with chemically resistant fluoroplastics.
As the result of multi-year performance tests, we have determined a typical diaphragm service life of 15,000 operating hours for our pumps. Thanks to the maintenance friendly design, diaphragms and valves can be easily changed. VACUUBRAND diaphragm pumps therefore run for many years with high reliability and require only minimal maintenance.



Pump chamber of a chemistry diaphragm pump

Chemistry compatibility of VACUUBRAND chemistry diaphragm pumps

PTFE: Polytetrafluoroethylene

ETFE: Ethylene tetrafluoroethylene

ECTFE: Ethylene chlorotrifluoroethylene

FFKM: Perfluoro elastomer

++ excellent chemical resistance

+ good to limited chemical resistance

– poor chemical resistance

***** for some solvents '+'

	PTFE	ETFE/ ECTFE	FFKM
Acid amides Dimethylformamide (DMF), Acetamide, Formamide	++	++	++
Acids, dilute or weak Acetic acid, Carbonic acid, Butyric acid	++	++	++
Acids, strong or concentrated Hydrochloric acid, Sulfuric acid, Nitric acid, Trifluoroacetic acid (TFA)	++	++	++
Alcohols, aliphatic Methanol, Ethanol, Butanol	++	++	++
Aldehydes Formaldehyde, Ethanal, Hexanal	++	++	++
Amines N-Methyl-2-pyrrolidone (NMP), Triethylamine	++	++	+
Bases Sodium hydroxide, Potassium hydroxide, Ammonia	++	++	++
Esters Ethyl acetate, Butyl formate, Amyl butyrate	++	++	++
Ethers Diethyl ether, Tetrahydrofurane, Dioxane	++	++	++
Hydrocarbons, aliphatic Pentane, Hexane, Heptane	++	++	++
Hydrocarbons, aromatic Benzene, Toluene, Xylene	++	++	++
Hydrocarbons, halogenated Methyl chloride, Chloroform, Ethylene chloride	++	++	++
Ketones Acetone, Cyclohexanone	++	++*	++
Oxidizing acids, oxidizing agents Ozone, Hydrogen peroxide, Chlorine	++	+	++
Sulfoxides Dimethyl sulfoxide (DMSO)	++	++	++

Efficient

VACUU·SELECT

VACUU·SELECT makes your tasks simple, easy, and efficient. Choose your application from a set of predefined applications or create your own routine in next to no time. Everything is right at your fingertips with the intuitive VACUU·SELECT user interface.

- Intuitive touch-screen control
- Application editor for individual processes
- Pre-defined vacuum processes
- Favourites menu for frequently used processes
- Fully automatic evaporations at the touch of a button

VARIO

VARIO-pumps provide pinpoint vacuum control by adjusting the motor speed. This guarantees optimal process times and reproducible results. VARIO-pumps run on demand for maximum energy efficiency, increased service intervals, and whisper quiet operation.
In Automated Evaporation mode, the VACUU·SELECT controller automatically detects solvent vapor pressures. With continuous optimization of the vacuum level based on real-time process conditions, there is no need to actively monitor your process – no more babysitting is required.

- Reliably maintains control for you – no more babysitting
- Makes manual adjustments and programming a thing of the past
- Minimizes foaming and sample loss
- Whisper quiet operation
- Drastically reduced power consumption
- Decreased service demand
- Minimizes process times, saving as much as 30% compared to other control methods
- Generates reproducible results

Variants

Basic model

Oil-free, chemically resistant diaphragm pumps for pumping aggressive gases and vapors.

Without vacuum control

Inlet separator (AK) catches liquid and physical material (condensate or particles) from the suction flow at the inlet of the pump. The pressure-side emission condenser (EK) enables nearly 100% solvent recovery.

With 2-point vacuum valve control

Using the VACUU·SELECT controller, you control the vacuum and process steps intuitively using the touch display. The 2-point vacuum valve control is carried out by automatically opening and closing a suction line valve.

With VARIO control

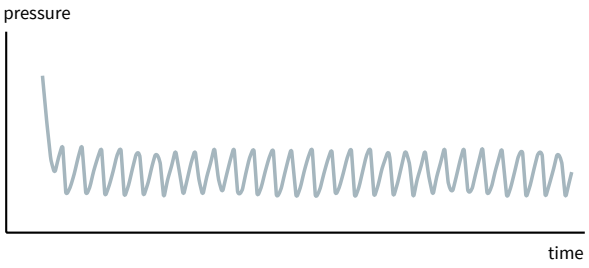
Using the VACUU·SELECT controller, you control the vacuum and process steps intuitively using the touch display. VARIO pumps control the vacuum by adjusting the motor speed. It offers the utmost precision, maximum efficiency and is especially quiet.

Control technology

VACUU·SELECT supports two vacuum control procedures. Classic 2-point control uses a solenoid valve with the VACUU·SELECT controller. Advanced VARIO control achieves unparalleled precision with motor speed control.

Classic 2-point vacuum valve control

- Control by opening and closing a vacuum valve
- Automatic vapor pressure detection
- Pump always runs at full speed
- Vacuum is maintained between the two valve switching points within the defined hysteresis range



Pinpoint VARIO control via motor speed control

- Control via motor speed of the pump
- Pump speed adjusts in realtime

  Drastically reduced power consumption
  Whisper quiet operation
  Decreased service demand
- Pinpoint vacuum

  Minimizes process times, saving as much as 30% compared to other control methods
- Fully automatic evaporations at the touch of a button thanks to proven and reliable boiling pressure detection and continuous tracking through out the entire process duration

  Minimizes foaming and sample loss
  Makes manual adjustments and programming a thing of the past

Basic model

Chemistry-design diaphragm pumps are an excellent solution for continuous, oil-free pumping of aggressive gases and vapors and meet the highest demands. The innovative VACUUBRAND design combines high pumping speed with a very good ultimate vacuum. All major parts in contact with pumped media are made of chemically resistant fluoroplastics. Well-proven PTFE sandwich diaphragms increase reliability and extend operating life.

- Outstanding chemical resistance and superior vapor tolerance
- Excellent pumping speed, even close to the ultimate vacuum
- Good ultimate vacuum even with opened gas ballast valve
- Extra quiet, low-vibration operation
- High long-term diaphragm lifetime, maintenance-free operation

Product name	Technical data
ME 1C	100 mbar | 0.7 m^3/h
ME 2C NT	70 mbar | 2.1 m^3/h
ME 4C NT	70 mbar | 3.9 m^3/h
ME 8C NT	70 mbar | 7.1 m^3/h
ME 16C NT	70 mbar | 16.3 m^3/h

Product name	Technical data
MD 1C	2 mbar | 1.3 m^3/h
MD 4C NT	1.5 mbar | 3.4 m^3/h
MD 12C NT	2 mbar | 12 m^3/h
PC 3001 basic	2 mbar | 2.0 m^3/h
PC 201 NT	1.5 mbar | 3.4 m^3/h

Product name	Technical data
MZ 1C	12 mbar | 0.75 m^3/h
MZ 2C NT	7 mbar | 2.0 m^3/h
PC 101 NT	7 mbar | 2.0 m^3/h

Product name	Technical data
MV 10C NT	0.9 mbar | 9.5 m^3/h

Without vacuum control

These vacuum pumps have a very wide range of application in evacuating, evaporating and pumping gases in chemical, biological and pharmaceutical laboratories. The separator at the inlet (AK) is made of glass with protective coating and retains particles and liquid droplets. The compact emission condenser (EK) on the exhaust side is particularly effective. It enables almost 100% solvent recovery for economical reuse and active protection of the environment. Synchro-variants enable two independent vacuum applications by a single pump. Each vacuum port is designed with a flow-control valve for easy adjustment of the effective volume flow rate.

- All advantages of the basic model
- Versions with AK: Protection of the pump from particles and liquid droplets
- Versions with EK: excellent environmental credentials thanks to efficient solvent recovery
- Synchro versions enable two applications to be operated at the same time, with individual control options. The integrated check valves prevent mutual interference and cross contamination

Product name	Technical data
ME 4C NT +2AK	70 mbar | 3.9 m³/h
ME 8C NT +2AK	70 mbar | 7.1 m³/h
ME 16C NT +EK	70 mbar | 16.3 m³/h

Product name	Technical data
MZ 2C NT +2AK	7 mbar | 2.0 m³/h
MZ 2C NT +AK+EK	7 mbar | 2.0 m³/h
MZ 2C NT +AK SYNCHRO+EK	7 mbar | 2.0 m³/h
MZ 2C NT +AK+M+D	7 mbar | 2.0 m³/h

Product name	Technical data
MD 1C +AK+EK	2 mbar | 1.3 m³/h
MD 4C NT +2AK	1.5 mbar | 3.4 m³/h
MD 4C NT +AK+EK	1.5 mbar | 3.4 m³/h
MD 4C NT +AK SYNCHRO+EK	1.5 mbar | 3.4 m³/h
MD 12C NT +EK	2 mbar | 12 m³/h
MD 12C NT +AK+EK	2 mbar | 12 m³/h

Product name	Technical data
MV 10C NT +EK	0.9 mbar | 9.5 m³/h

With 2-point vacuum valve control

These chemistry pumping units use chemical resistant solenoid valves to maintain process control. Once the first boiling point is detected by the controller, it maintains the pressure at this level.
With the pumping stations PC 520 select and PC 620 select it is even possible to control two different vacuum processes in parallel with just one VACUU·SELECT. In this case, a separate solenoid valve and vacuum sensor are installed for each process.
The pumping stations PC 511 select and PC 611 select each have a combination of one electronic control and one manual vacuum control connection, which also enables parallel control of two different vacuum processes. All pumping stations are also equipped with a suction-side inlet separator (AK) and a exhaust-side emission condenser (EK).

- All advantages of the basic model or variants without vacuum control
- Vacuum controller VACUU·SELECT with intuitive user interface
- Control by opening and closing a vacuum valve
- Controller detects solvent boiling, then holds the pressure level
- PC 520 select and PC 620 select: Pumping units can be configured to run one or two independent processes at the same time with one VACUU·SELECT

Product name	Technical data
PC 510 select	7 mbar | 2.0 m³/h
PC 511 select	7 mbar | 2.0 m³/h
PC 520 select	7 mbar | 2.0 m³/h

Product name	Technical data
PC 610 select	1.5 mbar | 3.4 m³/h
PC 611 select	1.5 mbar | 3.4 m³/h
PC 620 select	1.5 mbar | 3.4 m³/h

With VARIO control

VARIO-pumps and pumping units control the vacuum precisely via motor speed. The combination of speed controlled VARIO chemistry diaphragm pumps and the new VACUU·SELECT vacuum controller makes the VARIO select chemistry pumps the ideal solution for chemical processes that require precise vacuum. The pumping units are also equipped with a suction-side separator (AK) and an exhaust-side emission condenser (EK).

- All advantages of the basic model or variants without vacuum control
- Vacuum controller VACUU·SELECT with intuitive user interface
- Unprecedented long-term performance and uncompromising chemical resistance
- Fully automatic evaporation at the touch of a button thanks to innovative boiling pressure detection and continuous tracking
- Whisper quiet operation with significantly reduced speed
- Minimal operating costs due to reduced power consumption, oil-free and long service intervals
- Ideal solution for chemical processes that require precise vacuum

Product name	Technical data
ME 16C NT VARIO select	70 mbar | 19.3 m³/h
PC 3016 NT VARIO select	70 mbar | 19.3 m³/h

Product name	Technical data
MZ 2C VARIO select	7 mbar | 2.8 m³/h
PC 3002 VARIO select	7 mbar | 2.8 m³/h

Product name	Technical data
PC 3001 VARIO select	2.0 mbar | 2.0 m³/h
MD 4C VARIO select	1.5 mbar | 4.6 m³/h
PC 3004 VARIO select	1.5 mbar | 4.6 m³/h
MD 12C NT VARIO select	1.5 mbar | 14.3 m³/h
PC 3012 NT VARIO select	1.5 mbar | 14.3 m³/h

Product name	Technical data
MV 10C NT VARIO select	0.6 mbar | 12.8 m³/h
PC 3010 NT VARIO select	0.6 mbar | 12.8 m³/h
PC 3003 VARIO select	0.6 mbar | 2.8 m³/h

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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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