

VACUUBRAND®



## Vacuum in physics

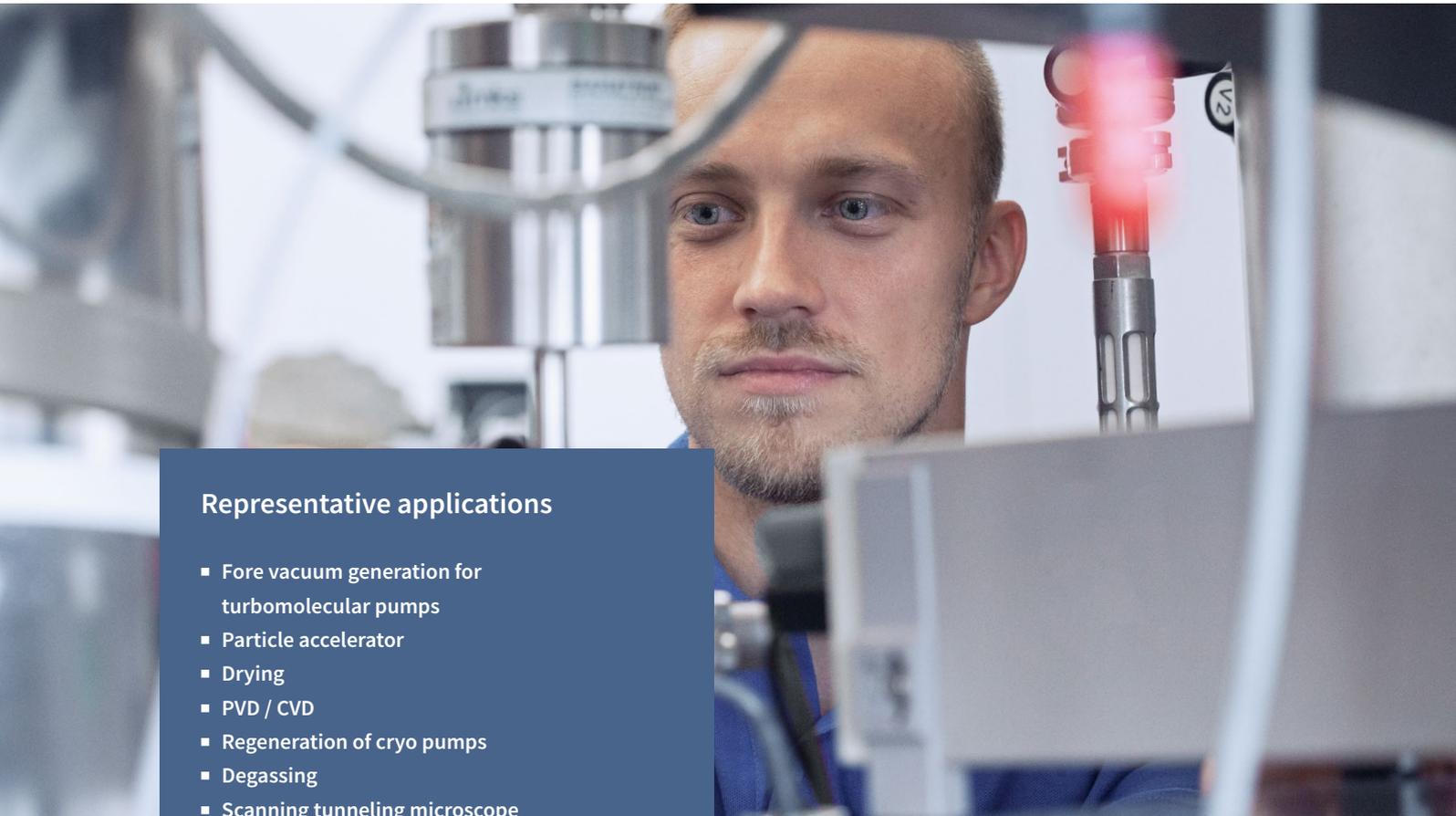
Oil-free vacuum pumps and precise gauges.  
Ideal for physical applications that require a dry and  
hydrocarbon-free vacuum.

[www.vacuubrand.com](http://www.vacuubrand.com)



Durable, reliable and efficient

# Vacuum in physics



## Representative applications

- Fore vacuum generation for turbomolecular pumps
- Particle accelerator
- Drying
- PVD / CVD
- Regeneration of cryo pumps
- Degassing
- Scanning tunneling microscope
- Mass spectrometer

As a cross-sectional technology, vacuum helps to optimize the operation of many processes. When developing our vacuum technology, we therefore pay attention to high performance, efficiency, reliability and sustainability.

There are many possible applications in science, research and industry, e.g. for high- and ultra-high vacuum systems, electron microscopes, particle accelerators, mass spectrometers or other analytical methods.

*"We were particularly impressed by the fact that VACUU·PURE has good flow rates even at higher pressures. For this reason, we can use VACUU·PURE as early as the initial evacuation of our UHV systems (ultrahigh vacuum systems). We avoid switching between different pump technologies for pumping out our systems and use as a backing pump."*

# Technologies

## Screw pump VACUU·PURE®

A dry and hydrocarbon-free vacuum is indispensable for many applications. The VACUU·PURE® offers high process purity through contamination-free operation in the vacuum range down to  $10^{-3}$  mbar.



## Diaphragm pumps

Our diaphragm pumps are the ideal vacuum technology for applications down to 0.3 mbar: They are used as dry-running fore vacuum pumps for modern wide-range turbopumps and permissible fore vacuum in the mbar range.



## Vacuum gauges

Reliable results and long-term stability: Our measuring instruments work precisely in the measuring range from atmospheric pressure to  $10^{-3}$  mbar. In addition, they impress with their user-friendly interface and compact design.



## Accessories

Quality – it's all in the detail: that's why we also offer a wide range of accessories and spare parts. Our wide range of vacuum valves and small flange components support the convenient integration of equipment into both simple and highly complex vacuum systems.



Contact our sales department for the selection of the right technology:

[www.vacuubrand.com/contact](http://www.vacuubrand.com/contact)

# Screw pump VACUU·PURE®

Do you need a dry and abrasion-free vacuum pump for the range down to  $10^{-3}$  mbar? Then our screw pump VACUU·PURE 10 is the ideal solution. It reliably delivers the benefits of our oil-free diaphragm pumps to a lower pressure range. VACUU·PURE 10 combines three important benefits for the user: 100% oil-free, no abrasion, and no wear parts.

A dry and hydrocarbon-free vacuum is indispensable for many applications such as in ultrahigh vacuum systems. As a main vacuum pump or as a fore vacuum pump, VACUU·PURE 10 offers a deep ultimate vacuum that was previously unreachable with oil-free technologies. With this feature, the screw pump covers many applications – such as analytics, fore vacuum for turbomolecular pumps or the regeneration of cryo pumps.



## Features

VACUU·PURE 10 is a 100% oil-free pump thanks to cantilevered spindles and a magnetic gear. The unique operating principle enables contact-free rotation of the spindles. That's why the vacuum pump operates oil- and abrasion-free. Without wear parts to change or troublesome oil changes to perform, VACUU·PURE 10 enables continuous operation, negating the need for regular maintenance. VACUU·PURE 10 is also very low in vibration and therefore suitable for applications where disturbing vibrations need to be avoided.

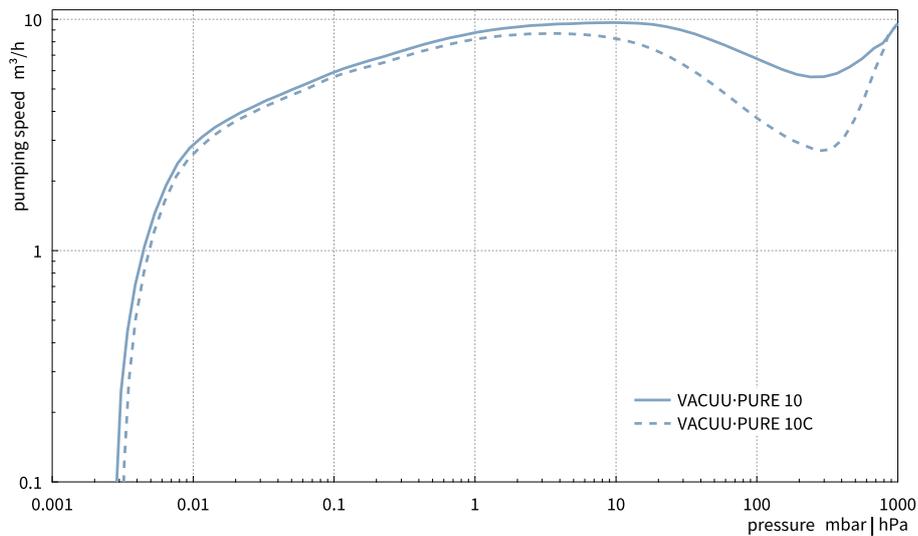
Unlike traditional fine vacuum technologies, the screw pump can also be operated continuously at higher pressures, which is a special feature of VACUU·PURE. This allows, for example, the evacuation of even larger systems from atmospheric pressure down to the  $10^{-3}$  mbar vacuum range, without the requirement for using multiple pumps. The deep ultimate vacuum also improves the performance of turbopumps.

## Product variant for aggressive media

The chemically resistant version VACUU·PURE 10C is especially designed for pumping aggressive gases and vapors. VACUU·PURE 10C easily handles high vapor loads through its high condensate compatibility. The integrated regeneration mode enables rapid drying of the vacuum pump after the end of the process. Another advantage is the integrated sealing gas function: This enables a high pumping speed for light gases in the pressure range below  $10^{-1}$  mbar.

*"The great thing is that we can operate both mass spectrometers in parallel with the VACUU·PURE screw pump. We only need one fore pump and no longer a separate one for each mass spectrometer. In addition, the screw pump with  $10^{-3}$  mbar has a much better vacuum than the previously used diaphragm pumps. As a result we can see that the power consumption of the turbomolecular pump has dropped."*

# Screw pump VACUU·PURE®



- 100% oil-free
- No abrasion
- No wear parts

Product name	Technical data
VACUU·PURE 10	5 x 10 <sup>-3</sup> mbar   10 m <sup>3</sup> /h
VACUU·PURE 10C	5 x 10 <sup>-3</sup> mbar   9 m <sup>3</sup> /h

„VACUU·PURE has proven to be an excellent fore vacuum pump for the various turbomolecular pumps used. Due to the very good ultimate vacuum, we are able to achieve a lower fore vacuum than with diaphragm pumps. This also improves the achievable ultimate vacuum of the turbomolecular pumps.“

# Diaphragm pumps

Do you already know our tried and tested, dry diaphragm pumps? These can be used in the vacuum range from atmospheric pressure down to 0.6 mbar and 0.3 mbar for VARIO® diaphragm pumps. By using optimized flat diaphragms as well as electronically controlled drive systems, our diaphragm pumps are compact, powerful and reliable.

Modern wide-range turbomolecular pumps are fore vacuum resistant in the mbar range. Therefore, you can use our diaphragm pumps as fore vacuum pumps for these wide-range turbomolecular pumps. The dry diaphragm pumps eliminate oil back-diffusion, risk of oil back-flow, as well as the need for oil changes.

Multi-year performance tests on diaphragm pumps with continuous ultimate vacuum measurement show: The service life of our diaphragms is over 40,000 hours –

## Modern VARIO® pumping units with vacuum control

Our all-in-one solutions offer special advantages: Diaphragm pumps with VARIO control together with the VACUU-SELECT vacuum controller.

VARIO technology controls the vacuum automatically and as required by adaptively adjusting the motor speed of the pump. The patented "Turbo Mode" program mode automatically finds the optimum motor speed for the fore vacuum pump. The result: continuous adaptation over the entire pressure range to achieve maximum effective pumping speed and lowest ultimate vacuum. The VARIO control also means that the pump never runs faster than necessary. This makes the pump whisper quiet, reduces energy consumption and vibration, and also extends the service life of the diaphragms.

Operation on the VACUU-SELECT vacuum controller is intuitive and quick to use: You can select predefined vacuum processes via touch display.

and this at a constantly very good ultimate vacuum. Especially for speed controlled systems, maintenance intervals similar to those of turbomolecular pumps.

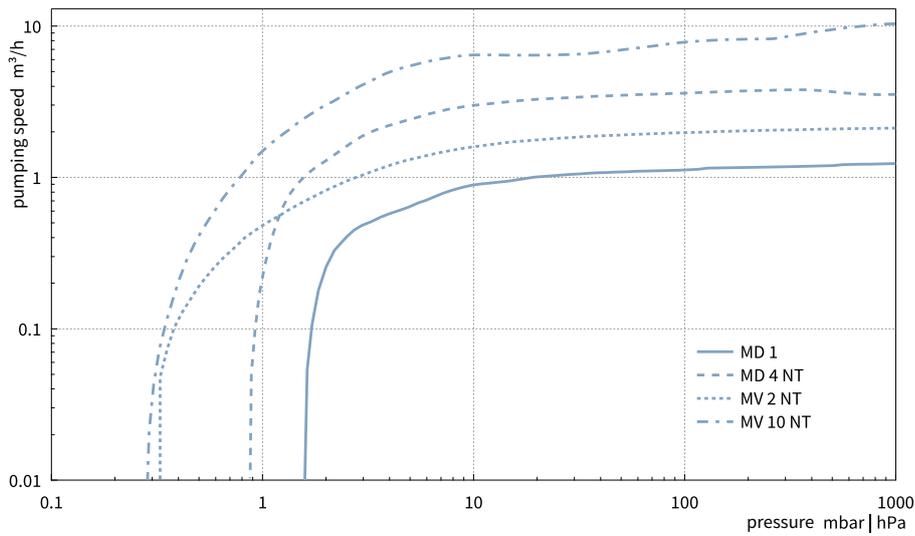
In addition, we offer built-in pumps that allow a wide range of integration options. These pumps are designed for integration into OEM equipment, such as leak detectors, residual gas analyzers, or waste gas analyzers. Due to their compact design and small dimensions, the 24 V DC variants permits the possibility of easy integration of the vacuum pump into the overall system and worldwide operation independent of local voltage differences.

Furthermore, VARIO technology enables precise and efficient speed control over the entire performance range of the pump.

Individual vacuum processes can also be easily created and run reproducibly at any time at the push of a button. The controller independently completes the process while you can focus on other tasks.



# Diaphragm pumps



- Oil-free operation
- Extremely smooth running
- Low maintenance

Product name	Technical data
MD 1	1.5 mbar   1.2 m³/h
MD 4 NT	1 mbar   3.8 m³/h
MV 2 NT	0.5 mbar   2.2 m³/h
MV 10 NT	0.5 mbar   10.4 m³/h

Product name	Technical data
MD 1C	2 mbar   1.3 m³/h
MD 4C NT	1.5 mbar   3.4 m³/h
MV 10C NT	0.9 mbar   9.5 m³/h

Product name	Technical data
MV 10C NT VARIO select	0.6 mbar   13.0 m³/h

Product name	Technical data
MD 4 VARIO select	1 mbar   5.7 m³/h
MV 2 VARIO select	0.3 mbar   3.3 m³/h
MV 10 NT VARIO select	0.3 mbar   12.1 m³/h

# Vacuum gauges



- Precise measurement results
- Reliable long-term stability
- User-friendly interface
- Compact design
- High chemical resistance

## Description

Our electronic gauges provide you with precise results e.g. for monitoring the fore vacuum pressure. A special feature is our vacuum gauge VACUU-VIEW extended: This covers the particularly wide measuring range from atmospheric pressure to  $10^{-3}$  mbar. You only need one measuring device for processes in the rough and fine vacuum range.

When developing our measuring devices, we focus on enabling you to easily integrate them into your workflows: Thanks to the compact design with integrated sensor technology, you can simply place the measuring devices where they are needed.

Product name	Technical data
VACUU-VIEW extended	Measuring range 1100 – $1 \times 10^{-3}$ mbar
VACUU-VIEW	Measuring range 1100 – 0.1 mbar

Simple displays and intuitive operating concepts also ensure comfortable and efficient work. The illuminated display makes it easy to read the measured values. Another advantage: Our measuring devices are robust and durable – even with aggressive chemicals. This is ensured by the chemically resistant combination of ceramic diaphragm sensor and ceramic-jacketed Pirani sensor.

For integration into modern automation systems, we offer the appropriate connections and interfaces on request.



Measuring devices with interface options are available in our online shop or on request at:

[info@vacuubrand.com](mailto:info@vacuubrand.com)

# Accessories



- Compact design
- Good conductance, optimum gas tightness
- Minimal wear
- Helium leak tested
- High flexibility

## Description

Quality – it's all in the detail: That is why we also offer a wide range of accessories and spare parts. These are perfectly suited to our vacuum pumps and vacuum networks and therefore make a significant impact on the durability and performance of the devices.

The range of our vacuum valves and small flange components offers many uses and combination options – for simple to complex vacuum systems.

The advantage of perfectly fitting components: They support and simplify the integration and connection of pumps from VACUUBRAND and other manufacturers. Flange dimensions according to DIN 28403 allow practical and compatible use.

Designed for vacuum control in the fine vacuum range, we also offer complete packages that include our versatile VACUU-SELECT vacuum controller and all the components you need for control in the fine vacuum range down to  $10^{-3}$  mbar.

- VS vacuum valves are compact, easy-to-operate, manual valves with high conductance.
- Stainless steel bellows valves are compact, manually operated valves with low leak rates and high conductance.
- Centering rings for KF components: VACUUBRAND offers a wide range of gasket materials such as Aluminum, Indium, NBR and FKM.
- For applications with ionizing radiation, metal KF seals are available.



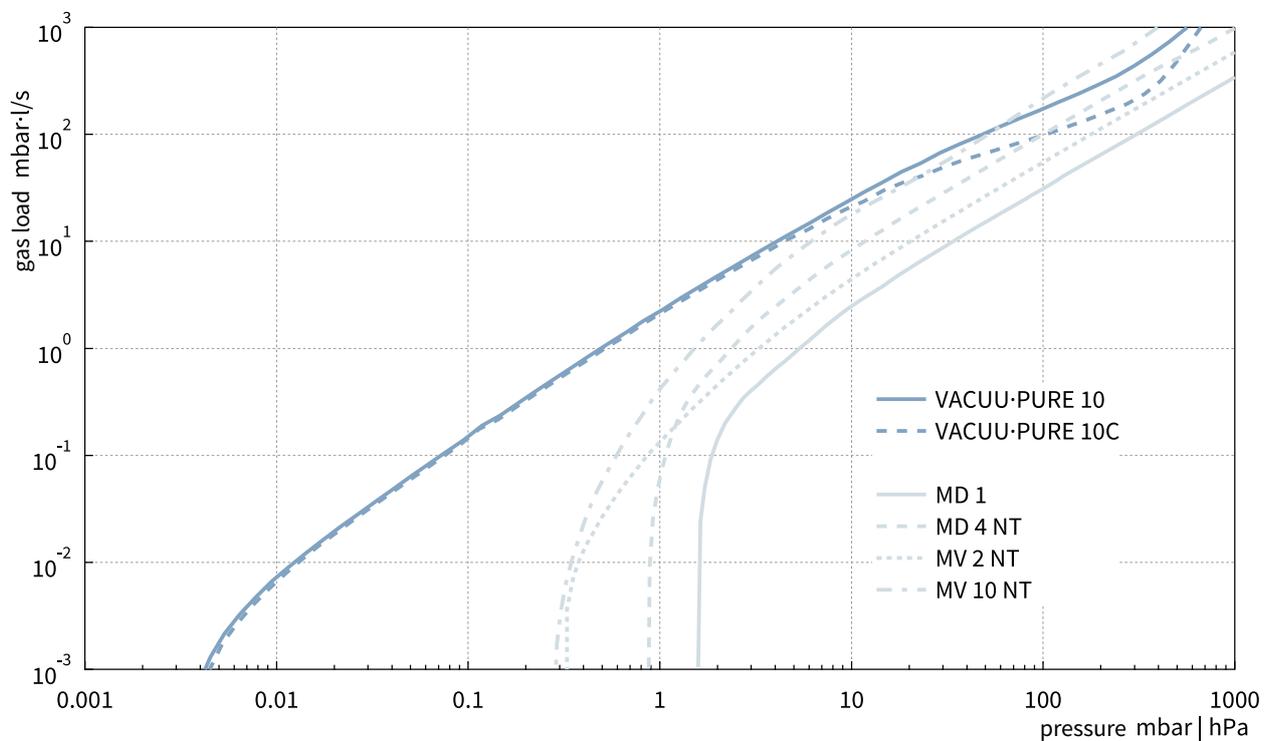
Would you like to get to know our wide range of accessories? Visit our online shop:

[shop.vacuubrand.com](https://shop.vacuubrand.com)

# The right fore vacuum pump

The chart below shows transferable gas-load over achievable backing pressure for a selection of common VACUUBRAND fore vacuum pumps. Plot your process-related gas-load as a horizontal line in the chart (gas-load in mbar l/s).

Taking the intersection of this line with the curves of the different pump types on the horizontal axis, one can derive the pressure value of the vacuum likely to be generated.



Contact our sales department for the selection of the right technology and pump:

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**VACUUBRAND®**

VACUUBRAND is part of the Brand group, a manufacturer of high-quality and innovative laboratory equipment and vacuum technology with a global team of approx. 1,000 employees.

With highly motivated and qualified employees, we manufacture the world's most comprehensive product family for vacuum generation, measurement and control for the rough and fine vacuum range in the laboratory.

**All with one goal:**

Enabling our customers to run reliable, safe and efficient processes. This is why we commit ourselves to continuous innovation, first-class performance, and outstanding quality.

Engineering excellence is central to our ability to deliver products and solutions renowned for their quality, durability, and reliability. Innovative technology, high quality materials and extensive testing deliver unmatched performance - engineered and manufactured in Germany.

Together with you, our experts will find the best solution for your application and provide you with first-class service along the way.

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