

Vacuum units for profile extrusion

*BluSystems – reduced energy consumption,
easy installation and simple operation*

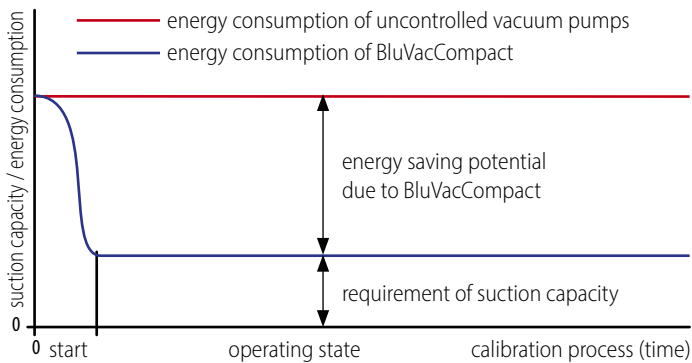
Energy saving and function

Intelligent vacuum units reduce operating costs

Leakage air supply is wasted energy

The vacuum and discharge pumps are responsible for most of the power consumption in calibration tables. Up to now, they have been selected based on the high suction capacity requirement during the start-up process for calibration.

To achieve the significantly lower suction capacity requirement in the subsequent operating state, systems are still used which supply leakage air or which throttle the vacuum pumps on the suction side. The electrical power consumption of the vacuum pumps remains consistently high - a completely unnecessary waste of energy.



Energy saving with BluSystems

The enormous energy saving with BluSystems is achieved by not adding leakage air. If smaller suction volumes or a lower vacuum is required after the profile has been calibrated, an internal control automatically reduces the speed of the electric motors, thereby lowering both the vacuum generation and the electrical power consumption. This demand-based vacuum generation saves large amounts of energy during the production process, which can run over several days in some cases.

The pressure level set on the calibration tools by the machine operator is monitored and maintained automatically through the ongoing pressure measurements and speed adjustments. Process-related pressure fluctuations are compensated with no intervention from the machine operator.

A second energy-saving effect is also achieved with the reduced operating water cooling requirements, because, at reduced speeds, the vacuum pumps also introduce less energy into the operating water.

Maximum efficiency

The biggest energy efficiency with BluSystems vacuum units is achieved by:

- » Using optimized tools, which manage without the use of leakage air as far as possible
- » Selecting the correct size and type of vacuum unit
- » Using the shortest possible suction lines with a suitable diameter



Animation

Scan the QR code and see exactly where energy can be saved in the process of profile calibration and how easily BluVac vacuum units can be retrofitted. Or visit our website www.speck.de

The saving – a calculation example from practice

Sector: Window profile extrusion

With preproduction series models of BluVac vacuum units, a renowned window profile manufacturer achieved an average saving of 67%. An existing extrusion line was upgraded.

Before Range with 3 uncontrolled vacuum pumps, type VN 125, electrical power consumption (P1) $3 \times 5.2 \text{ kW} = 15.6 \text{ kW}$

After Range with 3 BluVac vacuum units, electrical power consumption (P1) $3 \times 1.1 \text{ kW} = 3.3 \text{ kW}$

The reduced power consumption of 12.3 kW resulted in a saving of 49,200 kWh with an estimated 4,000 operating hours a year.

With an estimated € 0.10 per kWh, **this is a saving of € 4,920,-- per year.**

The lower operating water consumption of BluVac vacuum units also results in reduced energy consumption for operating water cooling.

The calibration process is automated by the integrated control.

BluVac vacuum units therefore pay for themselves quickly.

Vacuum units for profile extrusion

BluSystems from Speck Pumpen

Reduced energy consumption

Renowned manufacturers of window profiles confirm: Compared with a conventional vacuum pump, BluSystems vacuum units save between 60 % and 90 % of the energy consumption.

The enormous saving is achieved through the leakage-air free and demand-based vacuum generation based on constant pressure measurement and speed regulation of the electric motors.

Simple installation

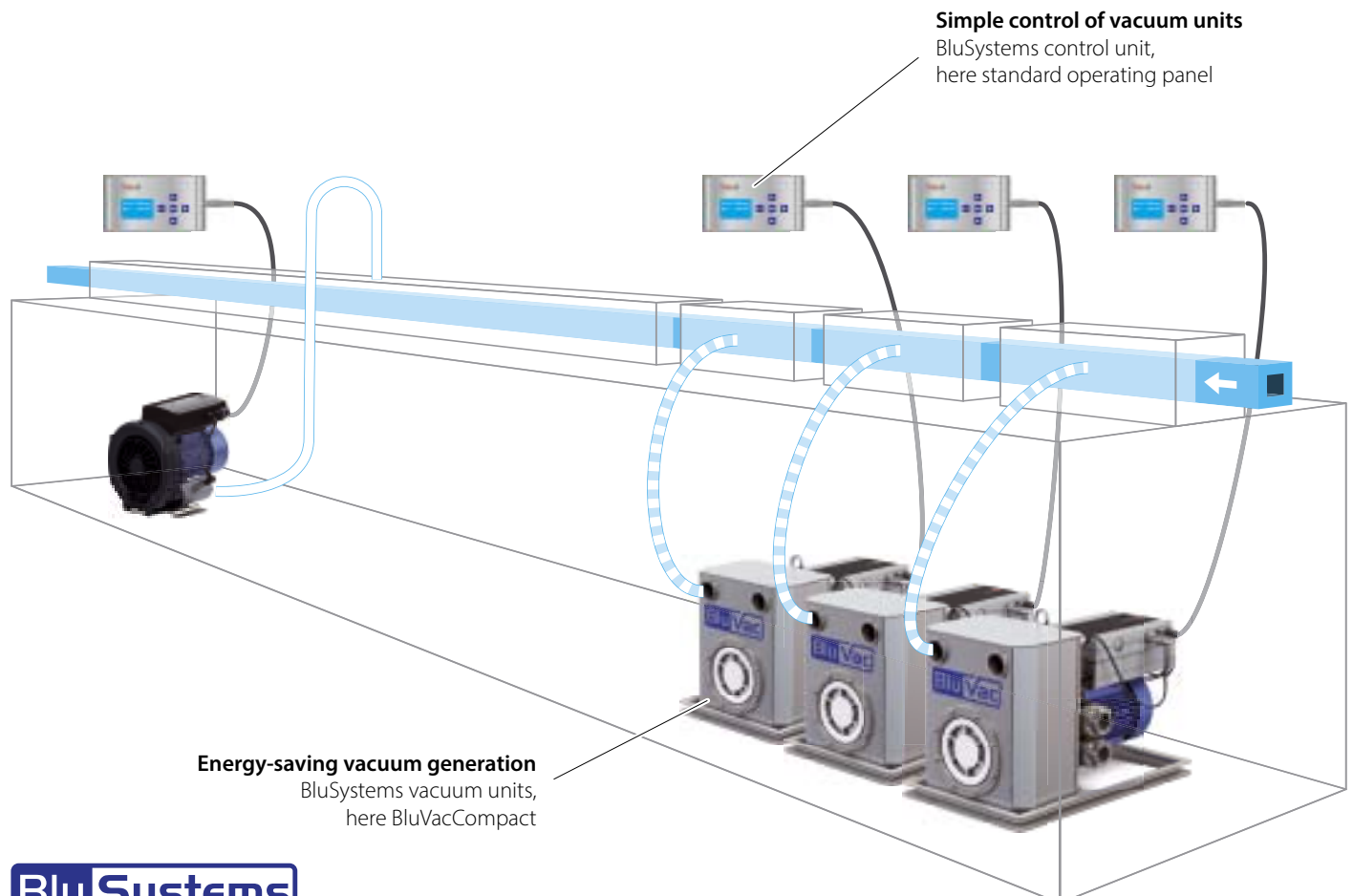
BluSystems has a modular design and includes different types of vacuum units in various sizes. Parallel operation with conventional vacuum pumps and other systems is no problem at all.

Thanks to the decentralised concept, users can upgrade their existing extrusion lines easily without extensive and costly conversion work. Existing pumps or systems can be replaced with BluVac or BluLine vacuum units.

For plant manufacturers, interfaces are also available for PLC controls and BluVac vacuum units as so-called cartridge inserts without separators.

Easy operation

Set the vacuum on the operating panel and you're done. The control ensures that the pressure level is constantly maintained. The machine operator no longer needs to monitor the process for the most part.



Blu Systems

BluSystems – one system for a variety of applications

Combine vacuum units to suit your requirements

Each profile has its own unique features - dry calibration, wet calibration. The need for different pressure levels and different suction volumes calls for specific solutions to ensure that the calibration table is optimally equipped.

With BluSystems from Speck, you can choose from four types of vacuum unit with different characteristics and in various sizes and find the best solution for your needs. If you want to use existing vacuum tanks in your calibration table, for example, the decentralized BluVacD vacuum unit is also available.



BluVacCompact (BluVacC)

Type: VI-...-BVC
Vacuum units with integrated separator, second generation in more compact design

Page 6

- » Extraction of air-water mixes
- » max. -930 mbar relative
- » max. 105 m³/h output
- » min. 6 m³/h water discharge



BluLine

Type: VN-...-BL
Vacuum units with vacuum pumps from the VN series

Page 8

- » Extraction of air with high levels of water
- » max. -930 mbar relative
- » max. 150 m³/h output
- » max. 4 m³/h water discharge



BluLine

Type: VG-...-BL
Vacuum units with vacuum pumps from the VG series

Page 10

- » Extraction of air with low levels of water
- » max. -930 mbar relative
- » max. 145 m³/h output
- » max. 2.5 m³/h water discharge

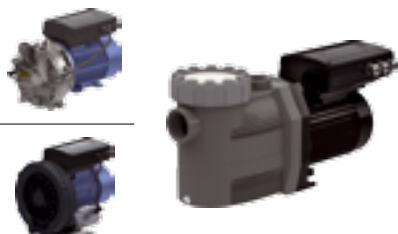


BluLine

Type: VB-...-BL
Vacuum units with side channel compressors from the VB series

Page 12

- » Extraction of moist air
- » max. -260 mbar relative
- » max. 500 m³/h output



BluVacDezentral (BluVacD)

Decentralized vacuum units for plant-side separators
Combination of vacuum pump/side channel compressor and a discharge pump
Page 14

- » Parallel extraction of air and water from a plant-side separator (e.g. vacuum tank) in the calibration table
- » max. 30 m³/h water discharge

BluSystems control units

Simple control of vacuum units



Setting the vacuum

The machine operator sets the desired relative vacuum (setpoint value) on the control unit – the BluSystems control panel is shown here. The control ensures that the pressure level remains constant from this point (just / actual value).

Three operating modes

The software offers three different operating modes depending on the process phase and requirements.

Manual mode is the mode for the start-up process with major pressure fluctuations and a high suction capacity requirement. The machine operator adapts the required suction volume to the motor frequency here via the manual setting.

If the required suction capacity drops and the fluctuations become lower at the end of the start-up process, the system is switched to automatic mode. The control now ensures that the pressure level is constantly maintained. The demand-based vacuum generation results in a significant energy saving.

The automatic mode with frequency control is a quality assurance function, which was developed in cooperation with users. The software detects sudden and unintentional air leakage or infiltrated air occurring during the running process (e.g. through holes in the profile) and reacts with a warning message and/or by switching to manual mode with constant motor speed.

Additional software functions

- » Storage and display of operating and consumption data
- » Visual warning in the display and/or with warning lights in the event of malfunctions
- » Master-slave function when several vacuum units are connected at a pressure level.

Page 17 shows different connection options for control units and vacuum units.



BluSystems operating panel – standard control unit

Properties

- » Direct display of actual and setpoint values, the actual and setpoint value can be set with just a few key operations
- » Up to 5 different vacuum units can be controlled with one control panel. Many users prefer one control panel per vacuum unit, however.
- » Simple and cost-effective

Display and operation

- » LCD display, 40 mm x 73 mm
- » Robust keys

Protection class

- » IP 65



BluSystems PLC interface – interface for PLC controls

- » The solution for calibration table manufacturers with plant-side display and control equipment with PLC controls
- » Up to 8 vacuum units can be controlled with the software installed on the coupler
- » Profibus interface on board, more on request

- » Plant-side

- » IP 20



BluSystems PLC panel with touchscreen and memory

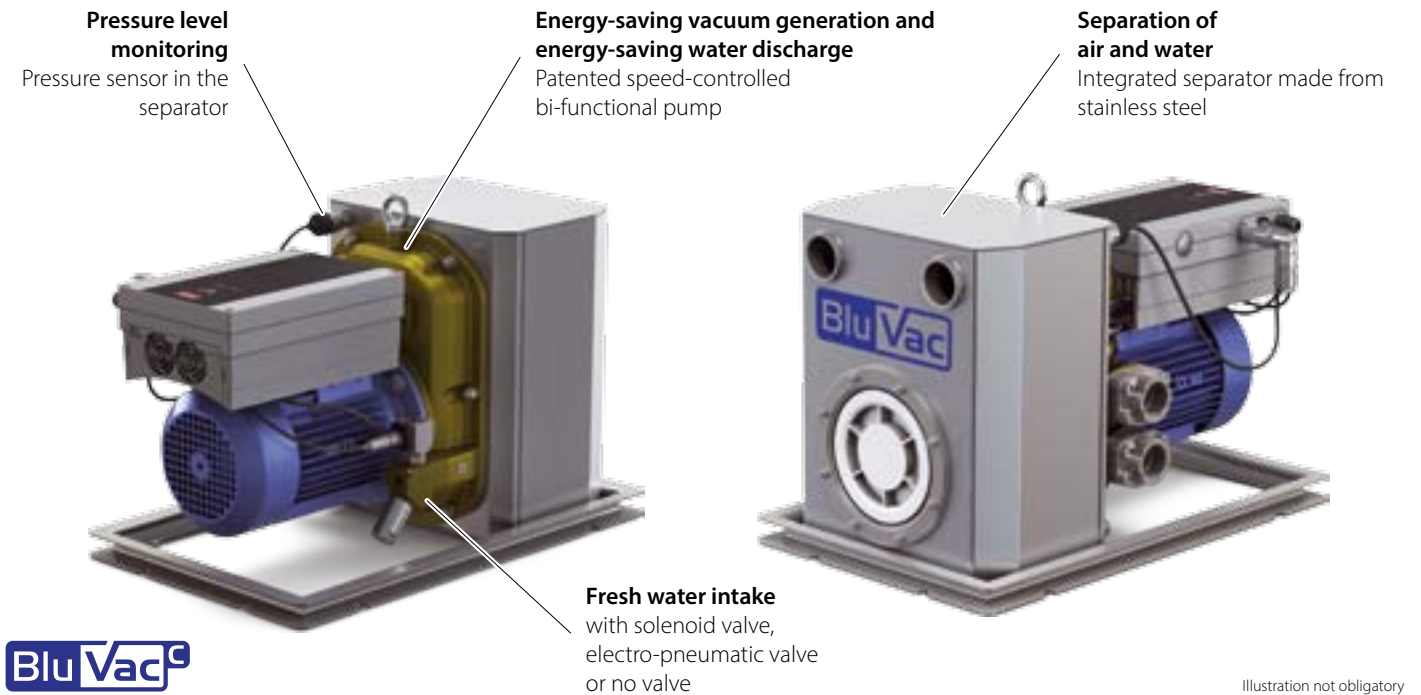
- » Up to 15 pressure level combinations can be stored
- » Up to 8 different vacuum units can be controlled
- » Flashing warning light in the event of alarms and dry run

- » Robust industrial touchscreen, 118 mm x 90 mm

- » IP 65

BluVacCompact

VI-...-BVC – vacuum units with integrated separator - second generation



BluVac[®]

Illustration not obligatory

Type	max. relative vacuum	max. suction capacity	min. delivery of water
VI-55-BVC	-930 mbar	60 m ³ /h	6 m ³ /h
VI-130-BVC	-930 mbar	105 m ³ /h	6 m ³ /h

Use

Extraction of air-water mixes

General

BluVacCompact vacuum units are further developed, second generation vacuum units. They are much more compact and robust compared with the first generation, while offering the same performance.

The vacuum units with mechanical seals are available in rust-free materials and cast iron.

Function

The machine operator sets the desired vacuum (setpoint) with the control unit. Air and water are discharged separately.

A pressure sensor in the separator above the water level constantly records the actual vacuum (actual value). Based on these pressure measurements, the frequency converter automatically regulates the set pressure level by adapting the motor speed.

The sensor-free regulation of the water level in the separator takes place via the special design of the bi-functional pump. The water discharge starts when the vacuum generation begins.

The energy saving

The high energy saving is achieved through the demand-based vacuum generation. The cooling requirements for operating water are also reduced. Two sizes enable the system to be designed optimally to suit your suction volume requirements..

Installation and retrofitting

BluVacCompact can replace existing water-bearing vacuum pumps (e.g. VN series) or conventional vacuum pumps.

BluVacCompact can also replace existing BluVac vacuum units from the first generation - the rail width, connections and capacity are identical.

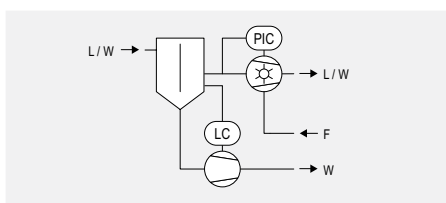
The footprint is approximately the same as that of a conventional vacuum pump and installation is just as easy as with a vacuum pump.

Control units

See page 5

Fresh water supply

See page 16



PIC **Pressure Indicate Control**
Pressure display and control

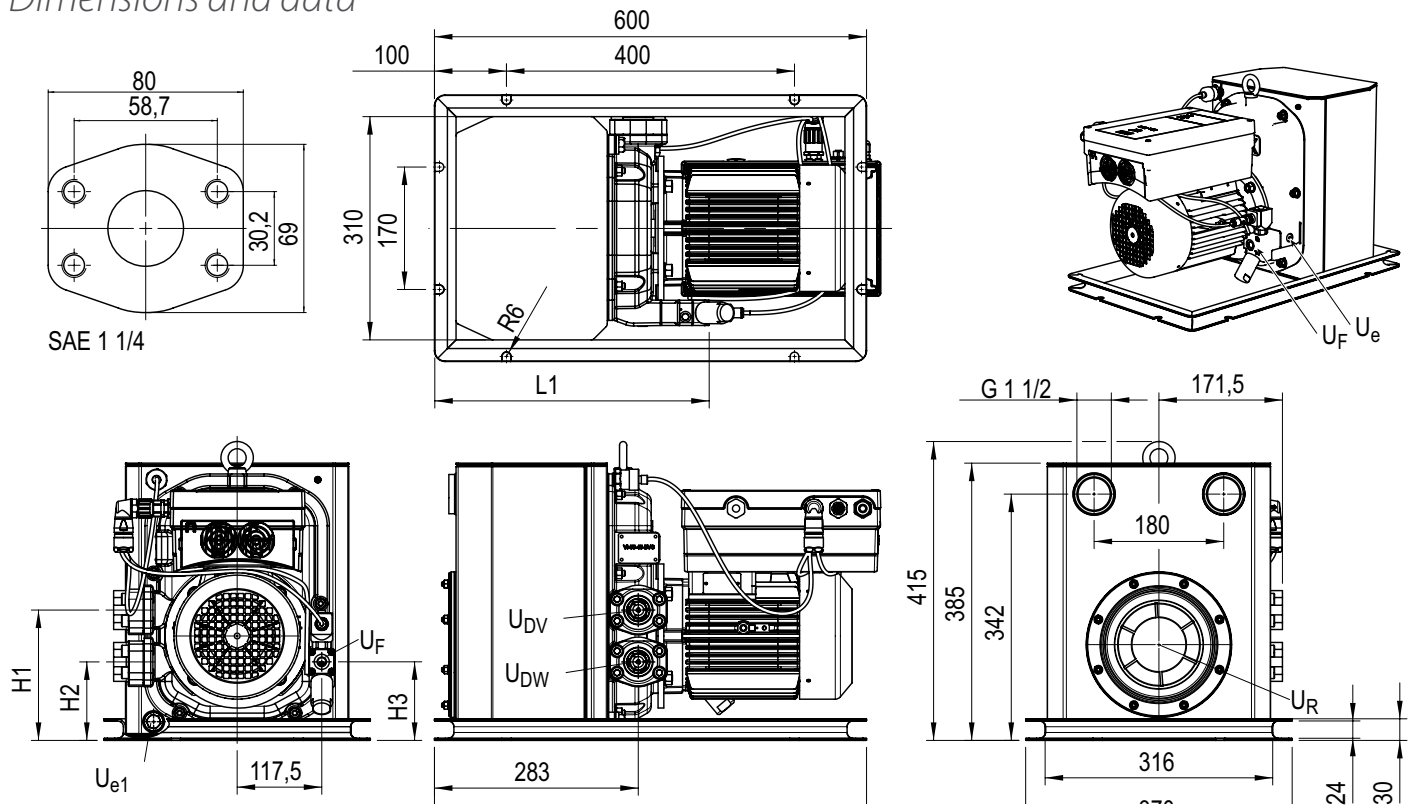
LC **Liquid Control**
Filling level control

L Air

W Water

F Operating / fresh water

Dimensions and data



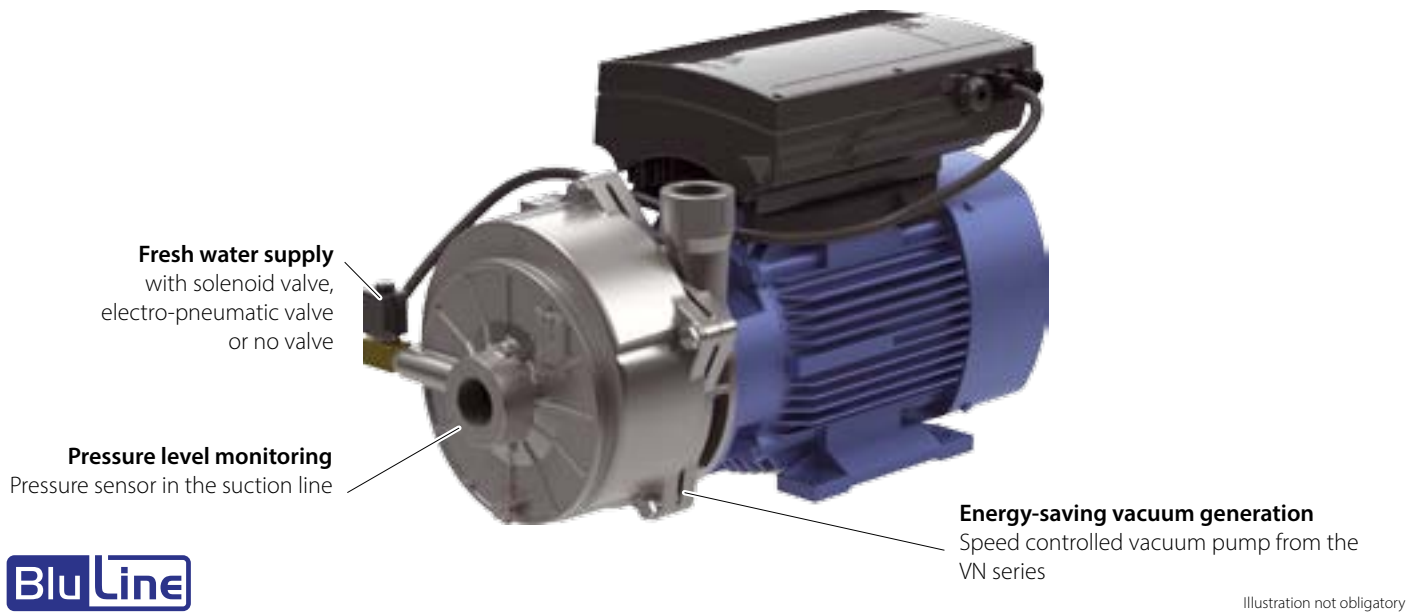
Type	Frame size	Dimensions					Weight	
		L1	L2	H1	H2	H3	kg	lbs
VI-55-BVC	90	381.5	580	181	109	109	67	148
VI-130-BVC	100	382.5	656	185	113	119	93	205

Connections

U_{DV}	SAE 1 1/4	Pressure connection vacuum pump
U_{DW}	SAE 1 1/4	Pressure connection water discharge pump
U_e	G 1/8	Connection for drainage (drainage fresh liquid supply)
U_{e1}	G 1/2	Connection for drainage (drainage separator)
U_F	G 1/4	Connection for fresh liquid supply of the vacuum pump
U_R	Ø 121 mm	Inspection opening

BluLine

VN-...-BL – vacuum units with vacuum pumps from the VN series



BluLine

Illustration not obligatory

Type	max. relative vacuum	max. suction capacity	max. delivery of water
VN-95-BL	-930 mbar	115 m ³ /h	4 m ³ /h
VN-125-BL	-930 mbar	150 m ³ /h	4 m ³ /h

Use

Extraction of air with high levels of water

General

The reliable VN type pumps are patented single-stage pumps with hub control. The vacuum units with mechanical seals are available in cast iron or stainless steel.

Function

The hub control with valve flaps enables water to be pumped in much higher quantities compared with a conventional vacuum pump.

The machine operator sets the desired vacuum (setpoint) with the control unit. A pressure sensor in the suction line constantly records the vacuum (actual value). Based on these pressure measurements, the frequency converter automatically regulates the set pressure level by adapting the motor speed.

The water discharge in this case is always connected with the vacuum generation.

The energy saving

The energy saving is achieved through the demand-based vacuum generation. The cooling requirements for operating water are also reduced. Two sizes with four motor rated powers enable the system to be designed optimally to suit your suction volume requirements.

Installation and retrofitting

BluLine vacuum units with VN type vacuum pumps can replace existing comparable vacuum pumps. The supplied pressure sensor is installed on the suction line.

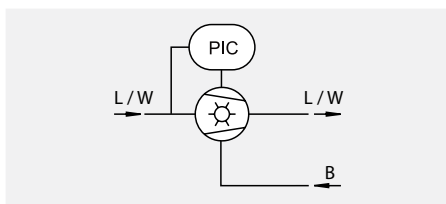
Existing uncontrolled VN type pumps can be upgraded to BluLine designs providing the motor is suitable.

Control units

See page 5

Fresh water supply

See page 16



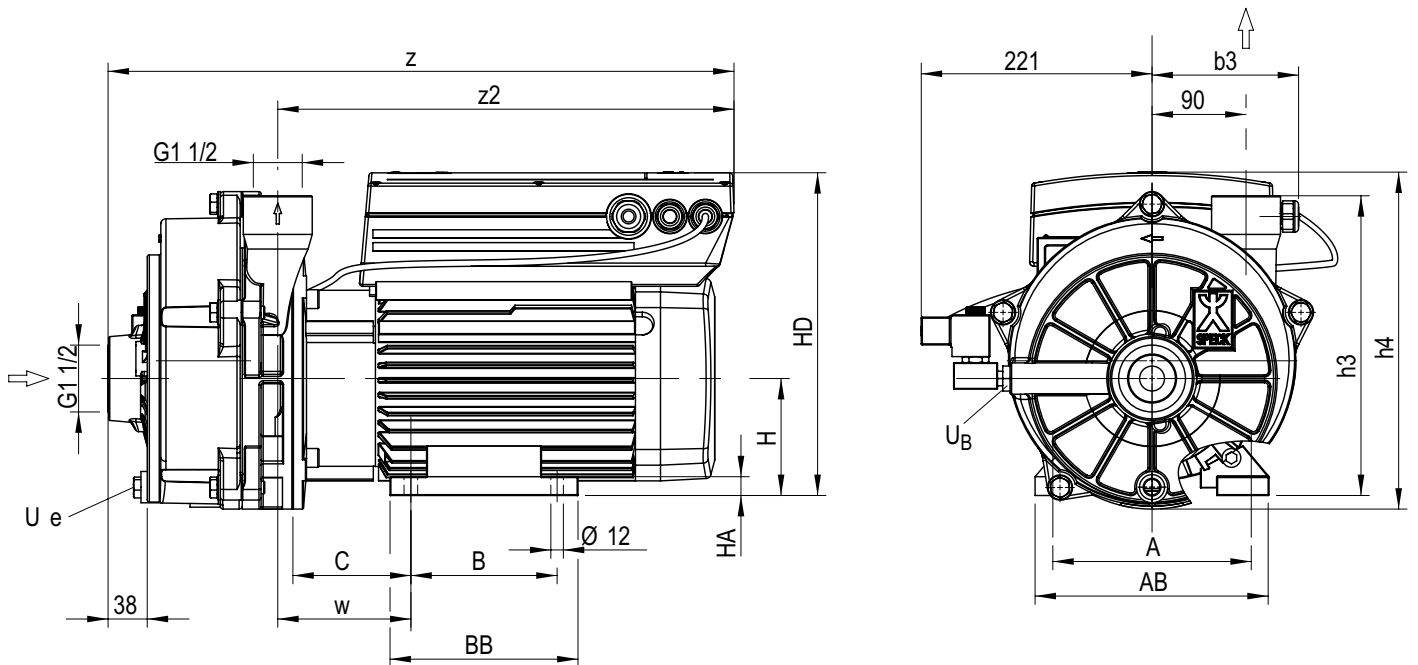
PIC Pressure Indicate Control
Pressure display and control

L Air

W Water

B Operating / fresh water

Dimensions and data



Type	Frame size	Dimensions														Connections		Weight		
		A	AB	B	BB	C	H	HA	HD	b3	h3	h4	u2	w	z	z2	U_B	U_e	kg	lbs
VN-95-BL	100	160	194	140	176	63	100	13	311	125	275	336	175	78	514	350	G1/2	G3/8	90	200
VN-95-BL	112	190	224	140	180	113	112	18	309	141	287	322	175	128	598	436	G1/2	G3/8	93	205
VN-125-BL	112	190	224	140	180	113	112	18	309	141	287	322	175	128	618	436	G1/2	G3/8	93	205
VN-125-BL	132	216	256	178	218	116	132	16	390	141	307	383	175	131	603	421	G1/2	G3/8	142	313

Connections

U_B	Connection for operating liquid
U_e	Connection for drainage (screw plug)

BluLine

VG-...-BL – vacuum units with vacuum pumps from the VG series

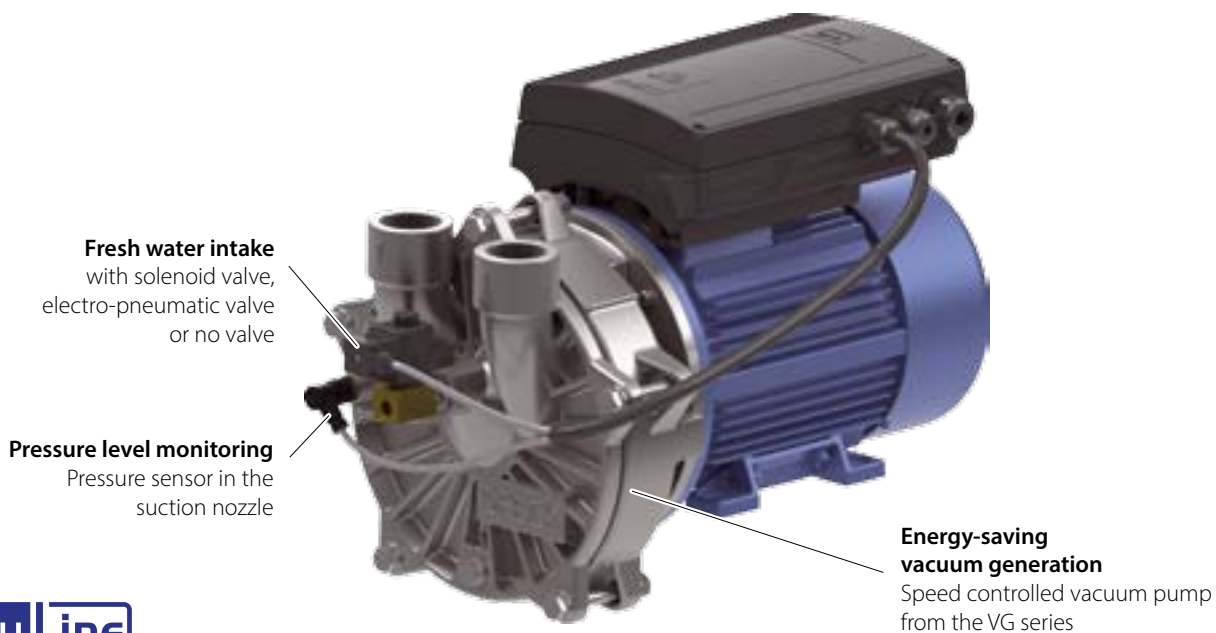


Illustration not obligatory

BluLine

Type	max. relative vacuum	max. suction capacity	max. delivery of water
VG-30-BL	-930 mbar	34 m ³ /h	0.4 m ³ /h
VG-55-BL	-930 mbar	57 m ³ /h	0.4 m ³ /h
VG-95-BL	-930 mbar	82 m ³ /h	2.2 m ³ /h
VG-130-BL	-930 mbar	120 m ³ /h	2.4 m ³ /h
VG-155-BL	-960 mbar	146 m ³ /h	2.5 m ³ /h

Use

Extraction of air with low levels of water or no water

General

The tried-and-tested VG type single-stage pumps are extremely low-maintenance due to the valve-free design with no dead space. The vacuum units with mechanical seals are available in cast iron or stainless steel.

Function

The machine operator sets the desired vacuum (setpoint) with the control unit. A pressure sensor in the suction nozzle constantly records the vacuum (actual value).

Based on these pressure measurements, the frequency converter automatically regulates the pressure level set by the machine operator by adapting the motor speed.

The water discharge in this case is always connected with the vacuum generation.

The energy saving

The energy saving is achieved through the demand-based vacuum generation. The cooling requirements for operating water are also reduced.

Five sizes with six motor rated powers enable the system to be designed optimally to suit your suction volume requirements.

Installation and retrofitting

BluLine vacuum units with VG type vacuum pumps can replace existing comparable vacuum pumps.

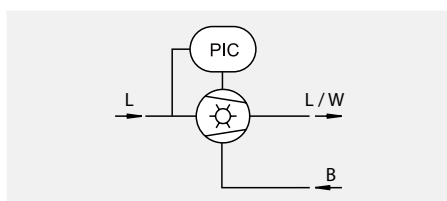
Existing uncontrolled VG type pumps can be upgraded to BluLine designs providing the motor is suitable.

Control units

See page 5

Fresh water supply

See page 16

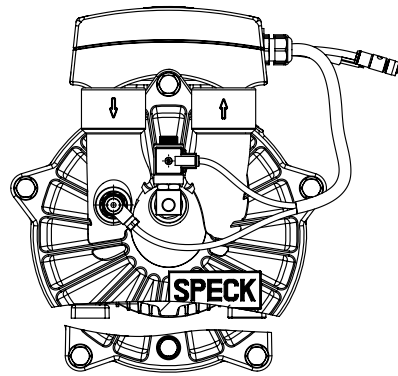
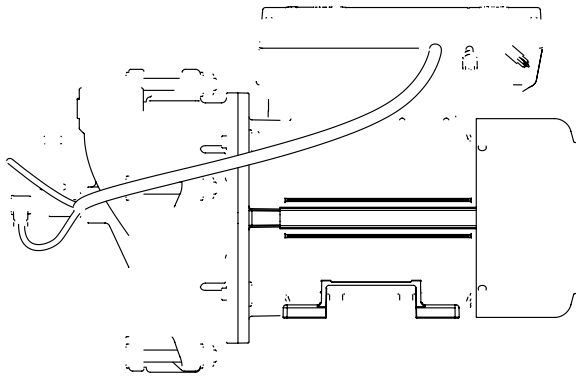
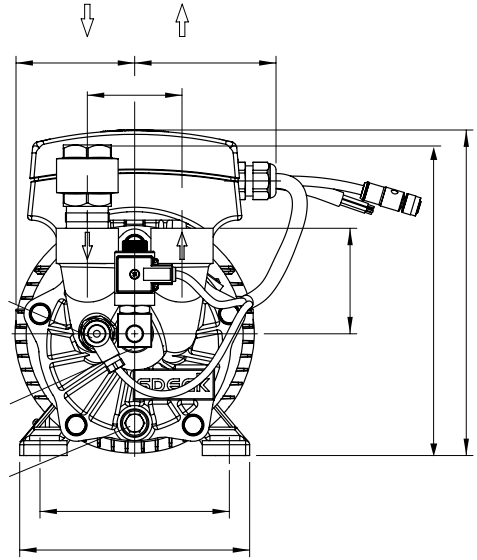
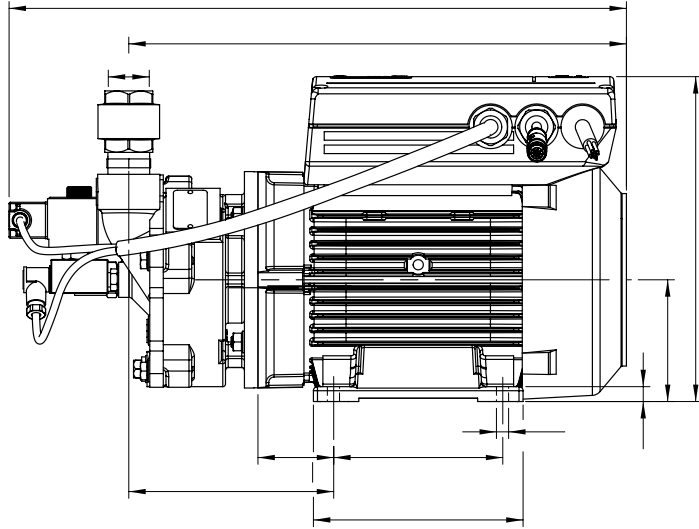


PIC Pressure Indicate Control
Pressure display and control

L Air

W Water

B Operating / fresh water



Space for your notes

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Pg-pumps@pergjerdrum.no
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*Centrifugal pumps /
Centrifugaalpomp*
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Vacuum pumps / Vacuümpompen
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info@dovac.nl
www.dovac.nl

*Heat transfer pumps / Pompes pour
fluid thermique*
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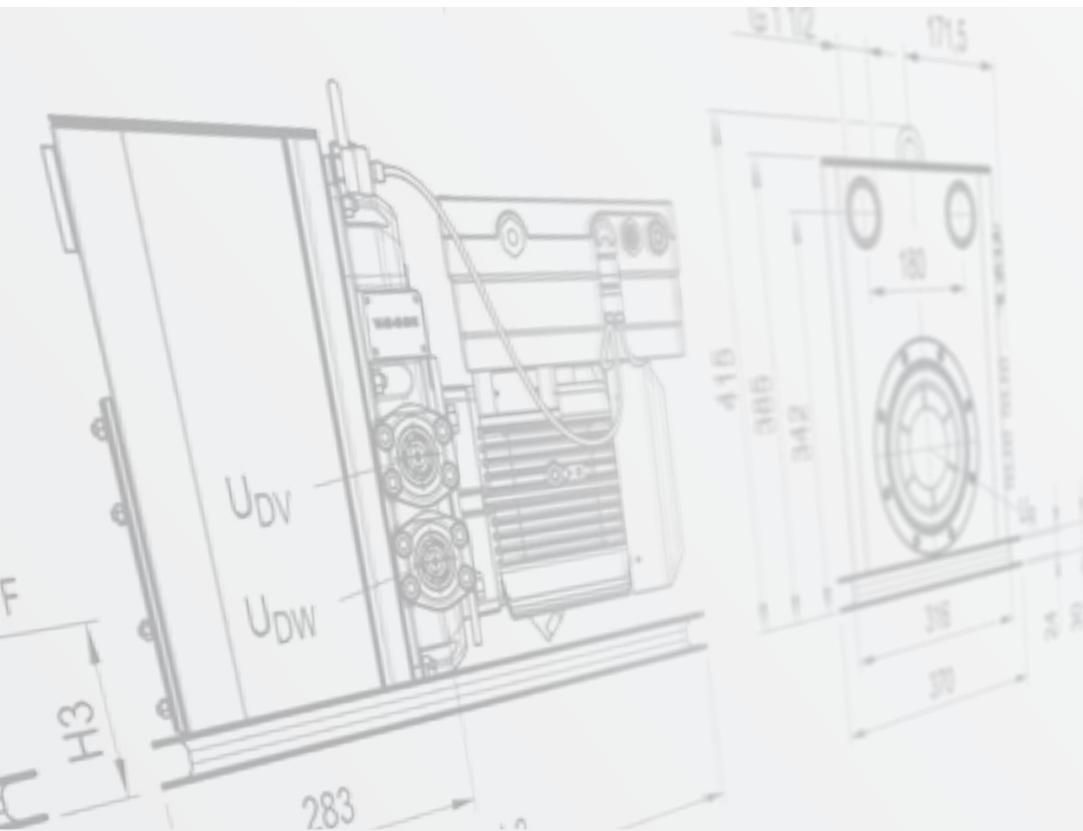
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