



SCHÖNN
Medizintechnik GmbH

MEDICAL VACUUM PLANT



MEDICAL VACUUM PLANTS

Definition

Vacuum generation is an essential component of the medical gas supply system in any hospital, and a reliable vacuum supply is indispensable in everyday clinical routine. Schön has extensive experience in the development and manufacturing of fully automatic vacuum systems, which are used to aspirate fluids and secretions from the OR, ICU and regular treatment wards. Schön offers its customers comprehensive planning, project management, installation and service from a single source. We use only quality proven products conforming to all relevant statutory regulations and standards.

Pump Operating System

Medical vacuum systems complying with HTM 02-01 and ISO 7396-1 employ three pumps, at least two of them are standby pumps (e.g. the design flow of a system with three pumps is provided by a single pump). Medical Vacuum systems complying with HTM 2022 employ two pumps, at least one of them is on standby (e.g. the design flow of a system with two pumps is provided by a single pump). It can be shown that as more pumps are provided, the energy consumed decreases. By using a larger number of small pumps an energy saving can be achieved. We have pre-determined our plant package using the optimum arrangement of pumps, between 3, so you don't need to worry about anything other than the flow capacity and footprint.

Increased Safety

The combination of high-quality components and intelligent system design ensures reliable operation and guarantees the vacuum supply even in the case of component malfunctions. All key components, such as pumps, filters and contactors, are backed up with identical reserve units in a redundant design based on relevant standards and thorough risk assessment. Built-in safety features can counter critical incidents, such as short circuits, overloads or cable breaks. This redundancy also allows maintenance of the system without interrupting the vacuum supply. Comprehensive alarm and monitoring functionality gives the operator constant feedback on the status of the system and informs immediately in case of any operational or emergency alarm. In addition, the fully automatic, microcontroller-based system, which includes base-load switcher, is backed up by vacuum sensors for maximum supply continuity.



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Oil-lubricated Rotary Vane Vacuum Pump

Oil-lubricated rotary vane vacuum pumps offer high flow capacities. They are simple and economical to install and operate, and are quiet and vibration free. They provide smooth, pulse-free vacuum and have low starting and running torque. The vanes are constructed from composite material for a long lifetime of use (up to ten years under normal operating conditions) and low noise levels.

BUSCH VACUUM PUMP



BUSCH R5 Oil Lubricated Pump

BUSCH VACUUM PUMP



BUSCH MINK Dry Claw Oil Free Pump

Oil Free Pumps

Efficient, Significant energy savings compared to conventional vacuum generators, minimal operating costs
Almost maintenance-free : dry and contact-free compression
Robust: Proven design, more than 200,000 vacuum pumps in operation

Motor

High Pressure Regulator

High Pressure Regulator
Optimally sized to suit the demands of frequent starts found in medical applications, each motor is air-cooled by an integral fan and protected by an overload fitted within its pump control panel.

Bacterial Filter

The high-efficiency bacterial filter elements have a penetration of less than 0.0001% when measured to BS 3928 to minimize the likelihood of microbial contamination of the oil. Duplex filters are provided for redundancy.

Vacuum Tank

The vacuum vessel is a mandatory back-up in the rare occurrence that all vacuum pumps are down. It also acts as a buffer for peaks in the flow demand.

Modular design of Schönn vacuum systems can be tailored exactly to any hospital's needs. At the core of the system, max for 4 oil-free or oil-lubricated pumps with performance ratings ranging from 0.25 kW to 18,5 kW provide the required vacuum at the specified redundancy level. All other system components, such as receivers, bacterial filters and secretion traps, are chosen to match the system dimensions.

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Vacuum Plant Control Panel

- Colourful, touch-screen and easy-to-use display.
- The system has automatic and manual operation feature.
- Adjustable working system up to 4 pumps.
- Audio-visual status display and fault display. Fault alarm statuses are designed according to HTM standards.
- Synchron Aging work system.
- Remote access with Modbus-RTU and connection to Hospital BMS.
- Pumps' temperature can be adjusted as PT100 and dry contact.
- Vacuum measurement units: mmHg and mbar.
- The pump information is displayed both on the touch screen and by the LED signals on panel: "cut in", "cut out", "defective".
- The pump transition times are preset at the factory, but these transition times can be adjusted according to the tank reserve, capacity required by the hospital, etc. (While one pump is running, reserve pump starts if the running pump does not meet the required capacity.)
- Vacuum start-stop value can be adjusted.
- Display plant pressure and line pressure value.
- Display filter pollution.
- Display power failure, thermic failure of the pumps.
- The pump can be deactivated when necessary.
- System detects deactivated pump(s) and reserve pump(s) will be activated.
- The operation and failure status of the pumps are animated on the touch screen.
- Pump and alarm status are displayed on the panel by LED signals according to HTM standards.
- The PCB system can operate on its own when any fault condition occurs on the panel.
- Pump working hours can be recorded and displayed.
- Language selection (German-English).
- Authorized person access by password.

"ALL PLANT INFORMATION SHALL BE TRANSFERED AND SHOWN ON SCHÖNN PLANT MANAGEMENT SYSTEM"

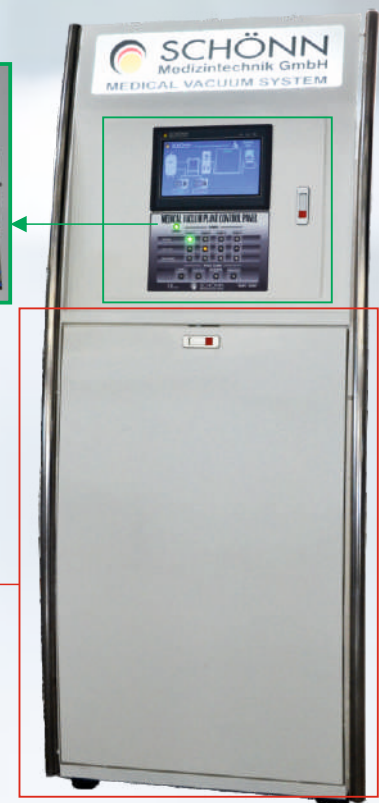


10" Touch Screen

- When a fault occurs in the SMVPL-3000 system, the date, time and cause of the fault remain recorded in the reports page.
- SMVPL-3000 model displays the values of the line the values of the line vacuum, and tank vacuum in the medical vacuum plant by analog indicators.



Internal part of the control panel



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TECHNICAL DATA







Pump Used	Type	Model No	Capacity of each Pump (lpm)		Capacity of each Pump (m3/h)		Net Plant Output (lpm) HTM02-01		Net Plant Output (m3/h) HTM02-01		kW		dB(A)	
			50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz
R5 RA 0025 F	Duplex	SMVPL-2X25M	416	500	25	30	416	500	25	30	1	1,2	60	63
	Triplex	SMVPL-3X25M					416	500	25	30				
	Quadruplex	SMVPL-4X25M					833	1000	50	60				
R5 RA 0040 F	Duplex	SMVPL-2X40M	666	800	40	48	666	800	40	48	1,4	1,7	63	66
	Triplex	SMVPL-3X40M					666	800	40	48				
	Quadruplex	SMVPL-4X40M					1333	1600	80	96				
R5 RA 0063 F	Duplex	SMVPL-2X63M	1050	1266	63	76	1050	1266	63	76	2	2,4	64	67
	Triplex	SMVPL-3X63M					1050	1266	63	76				
	Quadruplex	SMVPL-4X63M					2100	2533	126	152				
R5 RA 0100 F	Duplex	SMVPL-2X100M	1667	2000	100	120	1667	2000	100	120	2,7	3,4	65	68
	Triplex	SMVPL-3X100M					1667	2000	100	120				
	Quadruplex	SMVPL-4X100M					3334	4000	200	240				
R5 RA 0165 D	Duplex	SMVPL-2X165M	2667	3167	160	190	2667	3167	160	190	5,5	6,6	70	72
	Triplex	SMVPL-3X165M					2667	3167	160	190				
	Quadruplex	SMVPL-4X165M					5334	6334	320	380				
R5 RA 0205 D	Duplex	SMVPL-2X205M	3334	4000	200	240	3334	4000	200	240	5,5	6,6	72	74
	Triplex	SMVPL-3X205M					3334	4000	200	240				
	Quadruplex	SMVPL-4X205M					6668	8000	400	480				
R5 RA 0255 D	Duplex	SMVPL-2X255M	4167	4000	250	300	4167	5001	250	300	7,5	9,2	72	74
	Triplex	SMVPL-3X255M					4167	5001	250	300				
	Quadruplex	SMVPL-4X255M					8335	10002	500	600				
R5 RA 0305 D	Duplex	SMVPL-2X305M	5001	6001	300	360	5001	6001	300	360	8,3	10	74	76
	Triplex	SMVPL-3X305M					5001	6001	300	360				
	Quadruplex	SMVPL-4X305M					10002	12002	600	720				
R5 RA 0400 C	Duplex	SMVPL-2X400M	6834	8001	410	480	6834	8001	410	480	11	15	77	79
	Triplex	SMVPL-3X400M					6834	8001	410	480				
	Quadruplex	SMVPL-4X400M					13669	16003	820	960				
R5 RA 0630 C	Duplex	SMVPL-2X630M	10502	12669	630	760	10502	12669	630	760	15	18,5	77	79
	Triplex	SMVPL-3X630M					10502	12669	630	760				
	Quadruplex	SMVPL-4X630M					21004	25338	1260	1520				

	Oil-lubricated or oil-free rotary vane vacuum pumps.
Suction capacity	between 25 m ³ /h - 760 m ³ /h capacity
Electrical power rating	1,0 kW - 18,5 kW 50/60 Hz

	Medical Vacuum System
Power ranges	as per above list
Voltage	220-240 V / 380-400 V
Frequency	50 Hz / 60 Hz
Protection class, EMC, Electrical Safety	IP 55, EN 61000-6, EN 60204-1

Vacuum receiver	300 lt - 2000 lt. Capacity
Bacterial filter group	High performance filters with differential pressure gauges for indicating saturation.

Medically Certified	
The medical sector is more tightly regulated than ever before. Medical Vacuum Systems are pre-certified to simplify your certification process on installation. They surpass the requirements of the most demanding standards and regulations such as:	
<ul style="list-style-type: none"> • Medical Device Directive MDD 93/42/EEC • EN ISO 7396-1 • ISO 14971 • Health Technical Memorandums HTM 02-01 and HTM 2022 	
Furthermore, they are designed and manufactured according to ISO 9001, ISO 14001 and the ISO 13485:2003 quality management system.	

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