Product Range, Features and Design

Oil sealed rotary vane vacuum pumps are being used in all areas of vacuum engineering. They are equally suited for both industrial production and research applications. They may be used to generate a rough and medium vacuum or as backing pumps in pump combinations with Roots pumps or high vacuum pumps. By design, rotary vane pumps run quietly and do not produce much noise.

Many years of experience in vacuum engineering and the latest developments in pump technology combine in the SOGEVAC range the desire to adapt to the requirements of both the industry and the environment. The comprehensive range (pumping speeds ranging from 16 to 1200 $m^3 \times h^{-1}$ (9.4 to 707 cfm)) allows every customer to select the right pump for his particular needs.

Application Examples

- Car industry
- Food industry
- Furnaces and plants
- Laser technology
- Medicinal technology
- Metallurgy
- Power engineering, long-distance energy
- Space simulation
- Vacuum coating

Advantages to the User

- Operation from atmospheric pressure to ultimate pressure
- High pumping speed also at low pressures
- Low noise level
- Low vibrations
- Integrated exhaust filter, up to 99.9% efficient
- No oil loss owing to the integrated oil return line
- Exhaust gas free of oil mists
- Efficient air cooling (standard)
- Water cooling (optional)
- Low space requirement, easy to install
- Rugged
- Maintenance-friendly
- Compact design
- For direct fitting to Roots pumps from SV 100 up
- Optimum size-to-performance ratio
- High water vapor tolerance
- For use in various applications
- Wide range of accessories available for adaptation to differing problems

Design Principle

SOGEVAC pumps are oil sealed rotary vane pumps. Oil injected into the pump chamber for sealing, lubrication and cooling of the pump is recycled from the pump's oil reservoir and filtered before it is injected. The lubricant system is rated for continuous operation at high intake pressures so that the pumps may be used in a versatile manner in most rough vacuum applications (accessories are required for some pumps).

The oil carried with the compressed gas is roughly separated in the oil box before the discharged gas enters the integrated exhaust filters where the fine oil mist is trapped. The thus filtered oil is collected in the oil box and then supplied back to the pump.

This demister system, optimized to suit all operating conditions of the vacuum pump ensures oil-mist free exhaust gas (degree of separation over 99.9%) even at high intake pressures and when pumping vapors.

LEYBOLD rotary vane pumps from the SOGEVAC series excel through numerous special features:

Compact Design

The pumps have been so designed that efficiency of the pumps will be high.

Depending on requirements, the motor is linked to the pumping section directly via a coupling or via a V-belt. All vacuum components like anti-suckback, exhaust filter with oil return line needed for a complete vacuum unit as well as the optimized placement of all controls and monitoring components allow for an extremely compact unit.

Quiet Operation

SOGEVAC pumps are designed throughout to keep the noise level as low as possible. This is ensured by optimized running and sliding speeds and the selection of low-noise drive motors, as well as perfected manufacturing techniques using CNC automatic machines for optimized tolerances and reproducibility of the individual components.

Anti-Suckback Valve

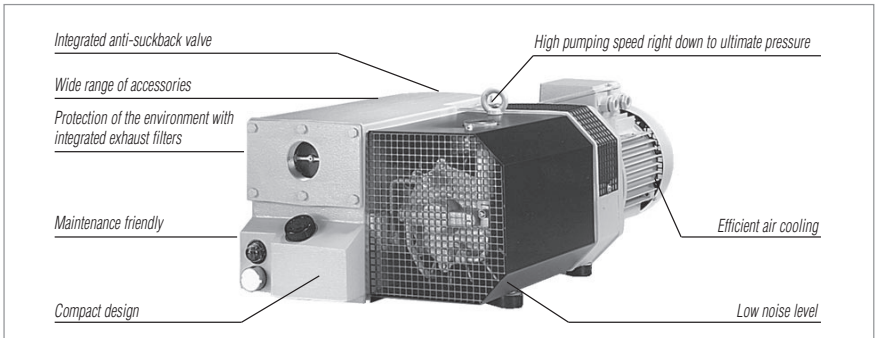
A valve is built into the intake of the SOGEVAC pumps. This "anti-suckback valve" is protected by a metal wire-mesh filter. During standstill of the pump (for example due to shutting down or a power failure) this valve closes the intake. This prevents the pressure from rising in the connected chamber while the pump is vented at the same time. Any suck-back of pump oil into the vacuum system is thus also effectively prevented. This blocking process operates under all operating conditions (below 800 mbar (600 Torr)) and even when the gas ballast valve is open.

Protection of the Environment

The built-in exhaust filter ensures an oil-mist free exhaust gas over the entire range of operating pressures – from atmospheric pressure to ultimate pressure.

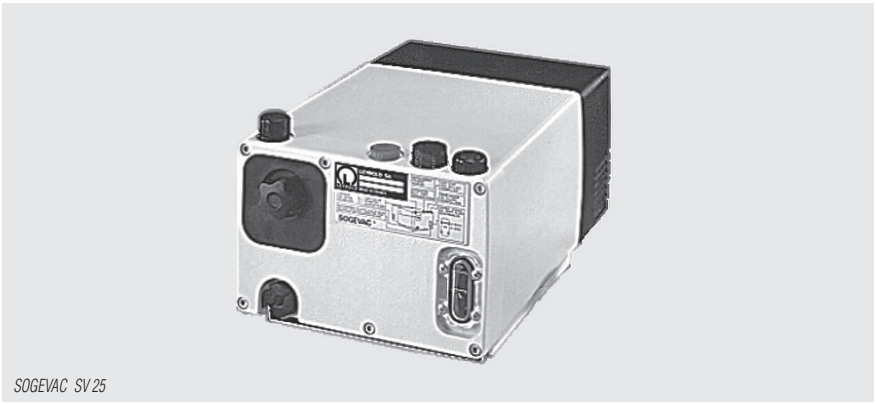
Supplied Equipment

All pumps are delivered with the required quantity of oil: SV 16 to SV 65 in a separate canister (GS 32 oil), whereas the SV 100 to SV 1200 already contain the oil (GS 77) and are thus ready for operation.

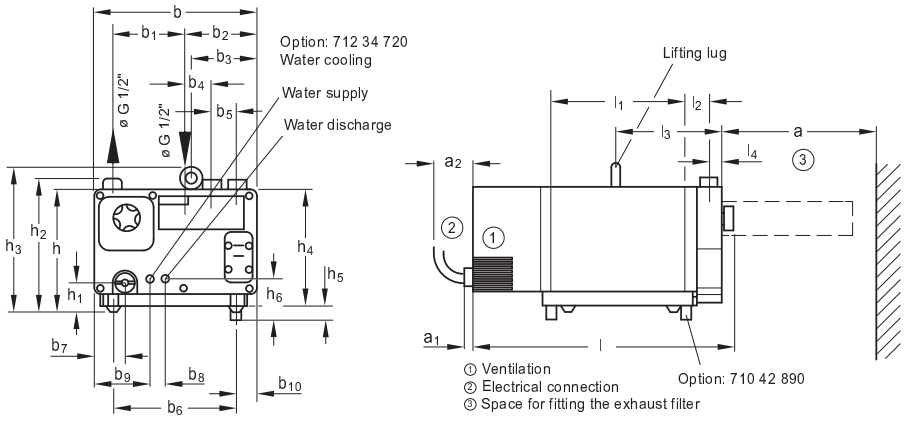


Outstanding features of the SOGEVAC pumps

SOGEVAC SV 16/SV 25

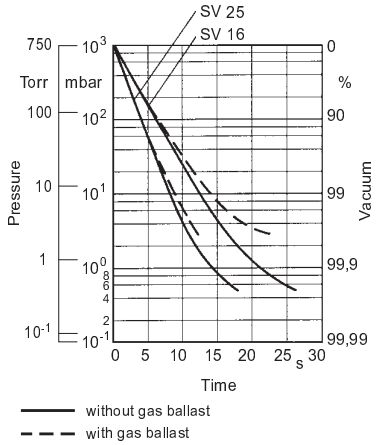


SOGEVAC SV 25

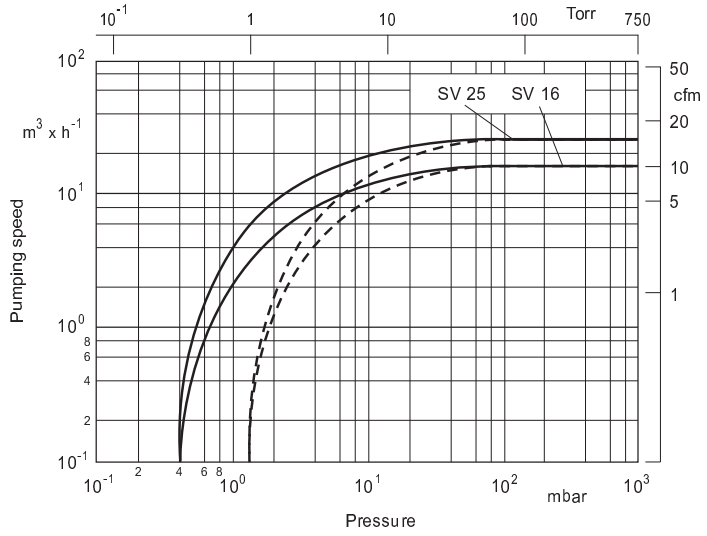


Type SV		a	a_1	a_2	b	b_1	b_2	b_3	b_4	b_5	b_6	b_7	b_8	b_9	b_{10}	h	h_1	h_2	h_3	h_4	h_5	h_6	l	l_1	l_2	l_3	l_4
16 / 25	mm	250	15	65	263	116	115	105	45	40	198	50	25	90	34	200	49	218	236	192	20	67	422	218	36	170	20
	in.	9.84	0.59	2.56	10.35	4.57	4.53	4.13	1.77	0.46	7.8	1.97	0.98	3.54	1.34	7.87	1.93	8.58	9.29	7.56	0.79	2.64	16.61	8.58	0.71	6.69	0.79

Dimensional drawing for the SOGEVAC SV 16 and SOGEVAC SV 25



Pump-down characteristics of a 10 l vessel at 50 Hz



Pumping speed characteristics of the SOGEVAC SV 16 and SV 25 at 50 Hz (60 Hz curves at the end of the section)

Technical Data		SOGEVAC SV 16		SOGEVAC SV 25	
		50 Hz	60 Hz	50 Hz	60 Hz
Nominal speed [1]	$m^3 \times h^{-1}$ (cfm)	16 (9.4)	19 (11)	25 (14.7)	29 (17)
Pumping speed [1]	$m^3 \times h^{-1}$ (cfm)	14.5 (8.5)	17 (10)	22.5 (13.3)	25.5 (15)
Ultimate partial pressure without gas ballast [1]	mbar (Torr)	≤ 0.5 (≤ 0.4)			
Ultimate total pressure with gas ballast [1]	mbar (Torr)	≤ 1.5 (≤ 1.1)			
Water vapor tolerance [1]	mbar (Torr)	40 (30)			
Water vapor capacity	$kg \times h^{-1}$ (qt/hr)	0.3 (0.32)		0.45 (0.47)	
Oil capacity	l (qt)	1.8 (2)			
Noise level [2]	dB(A)	56			
Admissible ambient temperature	°C (°F)	12 to 40 (54 to 104)			
Motor power	kW (hp)	0.55 (1)		0.75 (1.5)	
Nominal speed	min^{-1} (rpm)	1500			
Type of protection	IP	23			
Weight (with oil filling)	kg (lbs)	23 (50.7)		24 (52.9)	
Dimensions L x W x H	mm (in.)	422 x 263 x 236 (16.61 x 10.35 x 9.29)			
Connections, intake and exhaust [3]	G ((BPS) Inside thread)	1/2"		1/2"	

Ordering Information	SOGEVAC SV 16	SOGEVAC SV 25
SOGEVAC SV 16/SV 25 [3]		
with three-phase motor and integrated gas ballast valve		
230/400 V, 50 Hz	Part No. 109 01	Part No. 109 03
208 - 230/460 V, 60 Hz	Part No. 109 80	Part No. 109 90
200 V, 50/60 Hz	Part No. 955 01	Part No. 955 03
with single-phase motor and integrated gas ballast valve		
100 V, 50 Hz	Part No. 955 30	Part No. 955 32
230 V, 50 Hz	Part No. 109 00	Part No. 109 02
115 V, 60 Hz	Part No. 109 81	Part No. 109 91
230 V, 60 Hz	Part No. 109 82	Part No. 109 92
Other voltages/frequencies upon request		
Accessories		
Water cooling kit [4]	Part No. 712 34 720	
Oil level monitor [4]	Part No. 711 19 108	
Exhaust filter gauge, mechanical [4]	Part No. 951 91	
Spare parts		
Exhaust filter cartridge	Part No. 712 32 023	
Vanes, set of 3 pieces	Part No. 712 34 370	
Set of gaskets NBR (standard)	Part No. 971 97 152	
Set of gaskets FPM	Part No. 712 30 010	
Repair kit complete	Part No. 712 41 270	
Pump module complete	Part No. 712 32 230	Part No. 712 32 220

1) To DIN 28 400 and following numbers
2) Operated at the ultimate pressure without gas ballast, free-field measurement at a distance of 1 m
3) European and Japanese pumps have BSP, North and South American versions have NPT
4) Please indicate when ordering a pump

Technical description see Section "General"