Oil for SOGEVAC pumps for different pump types

Applications	SV 16 D, SV 25 D	SV 40, SV 65	SV 100	SV 200, SV 200 FP	SV 500, SV 630, SV 750	SV 10 B, SV 16 B/FP	SV 25 B/FP	SV 40 B, SV 45 FP	SV 65 B, SV 100 B, SV 120 B/FP	SV 300 B (FP) to SV 750 B (F)	SV 16 DI to SV 120 BI	SV 40 B category 1(i)/2(o) IIA	SV 40 B category 1(i)/2(o) IIB + H2	SV 40 B to 630 B category 3(i)/3(o)
Pump line	**D**			**A**					**B / BF**				**BI**	**ATEX**
LEYBONOL Oils														
LVO 120	■	■				■	■	▲[1]			■			
LVO 130	▲	■	■	■	■			▲[2]	■	■				
LVO 140	●	●	●			●	●	▲	▲					
LVO 150			●	●	●		▲	●	●	●				
LVO 211	▲[2]	▲[2]	●	●	●	▲	▲	●	●	●			■	■
LVO 300	●	●	●	●	▲			●	●	▲				▲
LVO 400	●	●	●	●	●				●	●				●[3]
LVO 420										■				
LVO 700	●					●	●			●				
LVO 710		●	●	●	●			●	●	●		●	●	●
DOT 4		●						●						

■ = Standard

● = Possible

▲ = Please contact Leybold Valence

[1] = with single-phase motor

[2] = with three-phase motor

[3] = ATEX outside only

The table only lists general applications. Your specific requirements might be subject to deeper analysis. For further questions, please contact our technical Sales support.

For information on oil specifications please refer to Catalog Part "Oils / Greases / Lubricants LEYBONOL®".

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 vacuum pumps or high vacuum pumps. The SOGEVAC pumps excel also to their low noise levels and smooth operation.

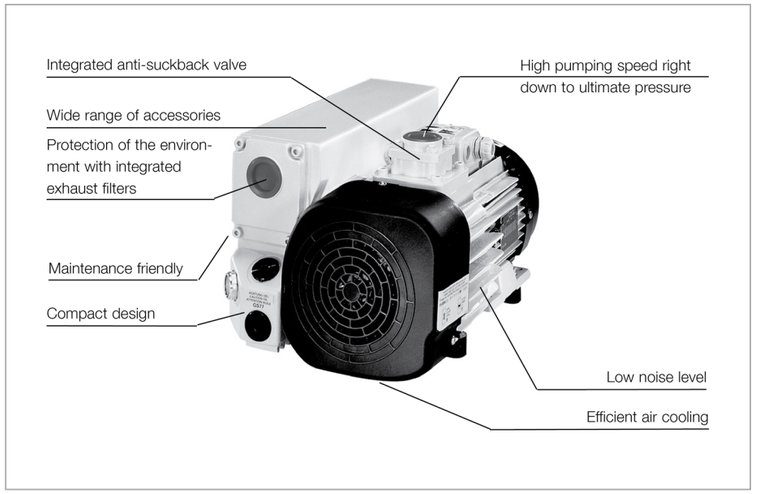
Many years of experience in vacuum engineering and the latest developments in pump technology combine in the SOGEVAC range the capability to adapt to the requirements of both the industry and the environment. The comprehensive range (pumping speeds ranging from 10 to 750 $m^3 \times h^{-1}$ (5.9 to 441.4 cfm)) allows every customer to select the right pump for his particular needs.

Application Examples

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

Advantages to the User

- Continuous operation from atmospheric pressure to ultimate pressure
- High pumping speed also at low pressures
- Low noise level
- Low vibrations
- Integrated exhaust filter, better than 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 B 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



Outstanding features of the SOGEVAC pumps

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, if required, before it is injected. The lubricant system is rated for continuous operation at high intake pressures (max. 1000 mbar abs.) 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 process 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.

The separating system optimized in consideration of all operating conditions for the vacuum pump guarantees – also at high intake pressures and when pumping out of vapors – an exhaust gas which is free of oil mist (separation efficiency over 99.9%).

Materials used in the pump:
Steel, Cast iron, Aluminium, Bronze, FPM (FKM), Glass, Polyamid 6.6, Filter material (Polymers, Paper), Epoxy resin & Glass fibre.

Leybold rotary vane vacuum 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.
For the SV 10 B through SV 65 B, the motor and pumping section use the same shaft. For the SV 100 B to SV 750 B the motor is linked depending on requirements to the pumping section directly via a coupling or via V-belts as a pedestal motor. 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 wiremesh filter. During standstill of the pump (for example due to shutting down or a power failure) the 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 gases over the entire range of operating pressures – from atmospheric pressure to ultimate pressure.

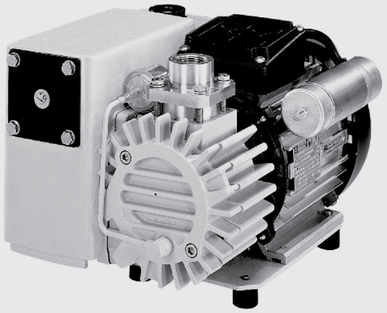
Supplied Equipment

All pumps are delivered with the required quantity of oil: SV 10 B to SV 65 B in a separate canister, whereas the SV 100 B and larger pumps already contain the oil and are thus ready for operation.

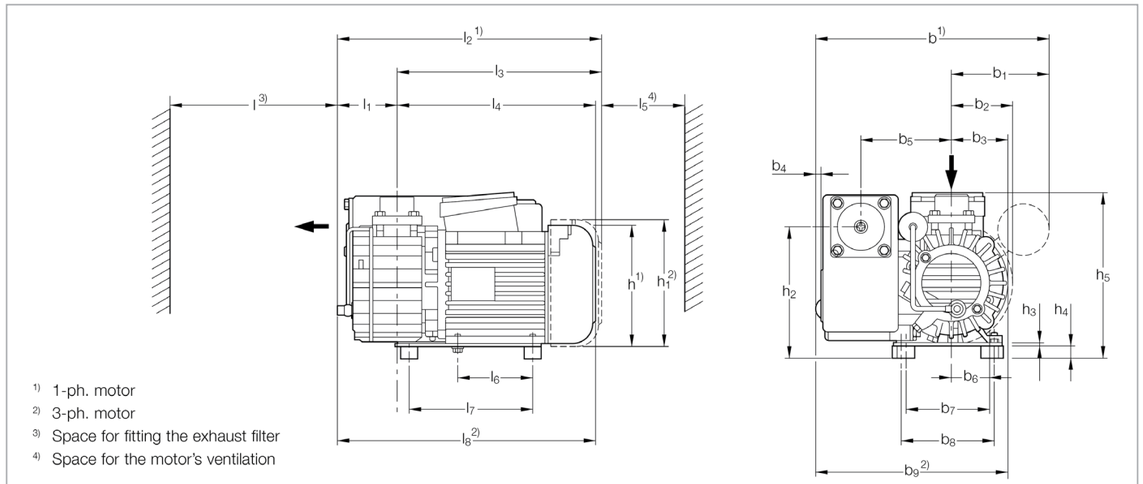
PFPE variants are typically delivered without fluid LVO 400.

Products

SOGEVAC SV 10 B / SV 16 B



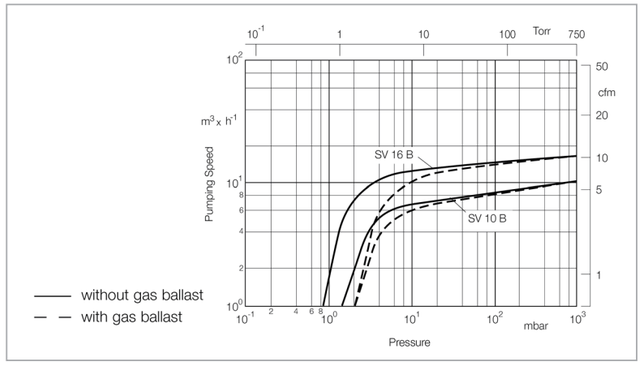
SOGEVAC SV 16 B



1) 1-ph. motor
2) 3-ph. motor
3) Space for fitting the exhaust filter
4) Space for the motor's ventilation

Type		b	b_1	b_2	b_3	b_4	b_5	b_6	b_7	b_8	b_9	h	h_1	h_2	h_3	h_4	h_5	l	l_1	l_2	l_3	l_4	l_5	l_6	l_7	l_8
SV 10	mm	279	117	72	67	7	109	52	100	112	230	142	152	158	4	15	199	200	72	315	244	237	100	90	148	309
B/16 B	in.	10.96	4.61	1.83	2.64	0.28	4.29	2.05	3.94	4.41	9.06	5.59	5.98	6.22	0.16	0.59	7.83	7.87	2.83	12.4	9.91	9.33	3.94	3.54	5.83	12.17

Dimensional drawing for the SOGEVAC SV 10 B and SV 16 B



Pumping speed characteristics of the SOGEVAC SV 10 B and SV 16 B at 50 Hz (60 Hz curves at the end of the chapter)

Notes

SOGEVAC SV 220 B



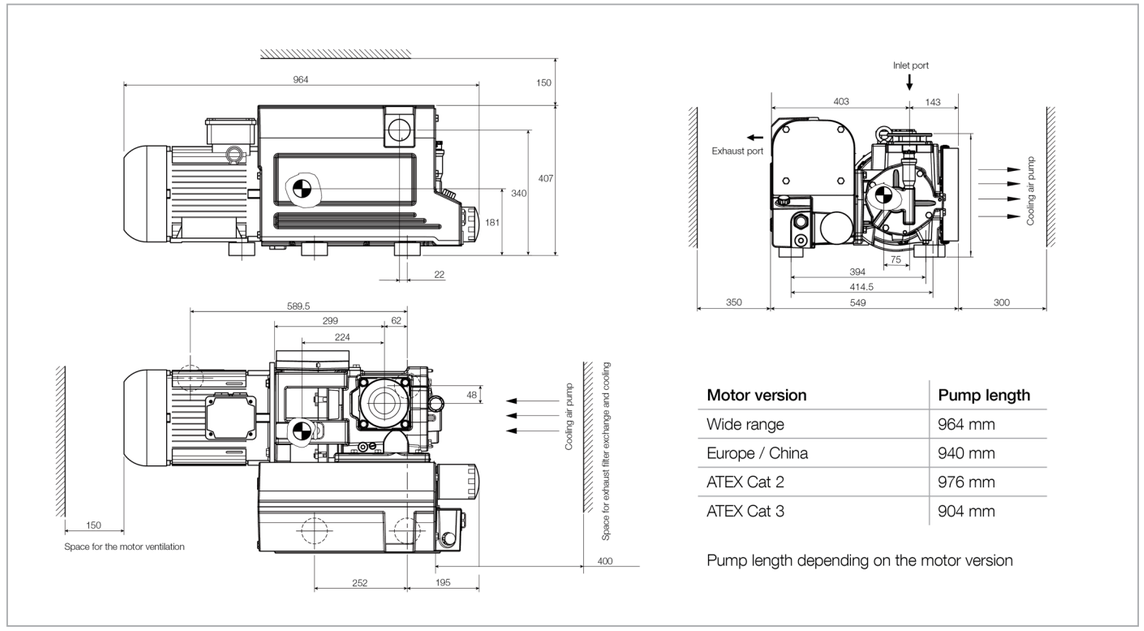
SOGEVAC SV 220 B

Advantages to the User

- Hygienic design
- Quick cycle times: SOGEVAC 220 B provides a very high pumping speed at all pressures
- Ideal for harsh applications:
  - Excellent ultimate pressure
  - Low pump temperature;
  - optimal oil lifetime
  - Optimized integrated lubrication
  - Yellow metal free as standard
- Excellent CoO: Integrated exhaust filters with low oil emissions
- Comfortable use: low and nice noise level
- Adapted to your needs: variant concept with many retrofittable accessories

Typical Applications

- Coating systems and load locks
- Food packaging and processing
- Oil purification
- Plastic and rubber injection presses
- Heat treatment / Metallurgy
- Lamination
- ATEX Cat 2 or 3



Motor version	Pump length
Wide range	964 mm
Europe / China	940 mm
ATEX Cat 2	976 mm
ATEX Cat 3	904 mm

Pump length depending on the motor version

Dimensional drawing for the SOGEVAC SV 220 B

Technical Data

		SOGEVAC SV 220 B	
		50 Hz	60 Hz
Nominal speed [1]	m^3/h (cfm)	200 (117,7)	240 (141.3)
Pumping speed [1]	m^3/h (cfm)	179 (105.3)	214 (126)
Ultimate total pressure without gas ballast [1]	mbar (Torr)	≤ 8×10^{-2} (≤ 6×10^{-2})	
Ultimate total pressure with standard gas ballast electromagnetic, permanent or ATEX 7 Nm^3/h [1]	mbar (Torr)	≤ 0.7 (≤ 0.5)	
Ultimate total pressure with big gas ballast 18 Nm^3/h [2]	mbar (Torr)	≤ 4.0 (≤ 3.0)	
Water vapor tolerance [1] with gas ballast 7 Nm^3/h [2]	mbar (Torr)	10 (7.6)	10 (7.6)
Water vapor capacity with gas ballast 7 Nm^3/h [2]	kg/h (qt/hr)	1.7 (1.8)	2.0 (2.1)
Water vapor tolerance [1] with big gas ballast 18 Nm^3/h [2]	mbar (Torr)	35 (27)	40 (30)
Water vapor capacity with gas ballast 7 Nm^3/h [2]	kg/h (qt/hr)	4.2 (4.4)	6.3 (6.6)
Noise level [3]	dB(A)	69	73
Admissible ambient temperature	°C (°F)	12 to 40 (54 to 104)	
Motor power	kW (hp)	4.5 kW (6 hp at 50 Hz and 4.8 kW (6.5 hp) at 60 Hz	
Mains voltage standard IEC three-phase motor	V	220 - 230 - 240 /380 - 400 - 415 V±10%, 50 Hz and 440 - 460V±10%, 60 Hz - IE3 for other motors please contact Leybold	
Nominal speed	min^{-1} (rpm)	1470 (1470)	1765 (1765)
Type of protection	IP	55	
Leak rate	mbar x l/s	≤ 1×10^{-3}	
Materials (materials in contact with the process gas)		Steel, cast iron, Aluminium, Bronze, FPM (FKM), Glass, Polyamid 6.6, Filter material (Polymers, Paper), Epoxy resin & Glass fibre	
Oil capacity	l (qt)	7.5 (7.8)	
Weight (with oil filling)	kg (lbs)	180 (396)	
Dimensions (L x W x H)	mm (in.)	tbd	
Connection (inside thread) [4]			
Intake	G or NPT	2"	
Exhaust	G	2"	

[1] To DIN 28 400 and following numbers
[2] Ordering Information see Chapter “Accessories”
[3] Operated at the ultimate pressure without gas ballast, free-field measurement at a distance of 1 m (3.5 ft)
[4] Pumps have G threads, NPT screw-in adapters available

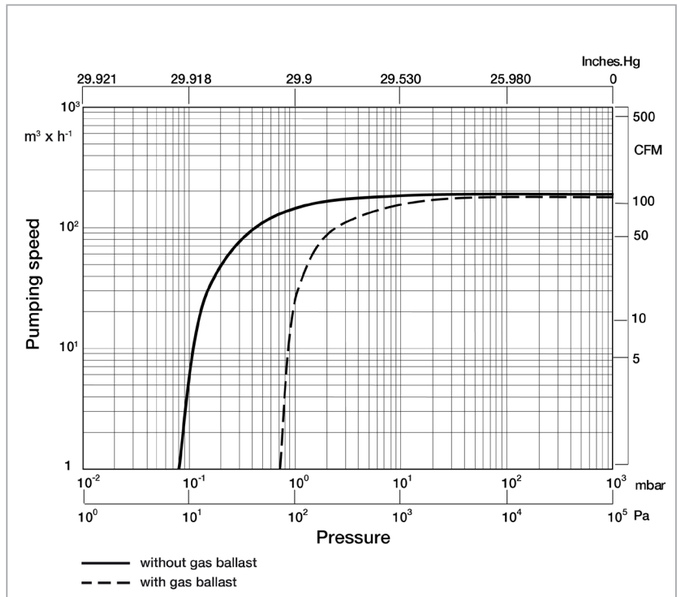
Ordering Information

	SOGEVAC SV 220 B	
	50 Hz	60 Hz
	Part No.	
SOGEVAC SV 220 B [1] with oil filter and mineral oil with manual gas ballast up to 7 Nm^3/h air cooled with IEC three-phase motor, 220 - 230 - 240 /380 - 400 - 415 V±10%, 50 Hz and 440 - 460V ±10%, 60 Hz - IE3	960602V	
SOGEVAC SV 220 B [1] with oil filter and mineral oil with manual gas ballast up to 7 Nm^3/h air cooled with IEC three-phase motor, 200 V, 220/380 V, 230/400 V, 240/415 V and 200 V, 220/380 V, 230/400 V, 440 V, 460 V, 60Hz - IE3	960617V	

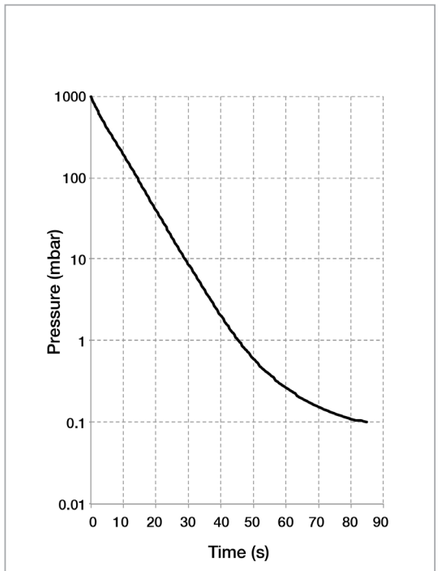
[1] Pumps with European and Japanese motors have G threads, IEC motors (Europe) 50/60 Hz have IP 55, NEMA motors have TEFC without terminal board

Ordering Information

	SOGEVAC SV 220 B 50 Hz / 60 Hz
	Part No.
Accessories	
Big gas ballast connection 16 KF / G1/2“	**71118120V**
Gas ballast filter G1/2“ for big gas ballast	**971442250**
Big gas ballast 18 Nm³/h with G1/2“ connection	**9600GBB**
Permanent gas ballast 16 KF	**GK6704215**
Electromagnetic gas ballast 16 KF (24 V DC)	**GK6704190**
Standard manual gas ballast	**GK6703134**
Exhaust filter monitoring visual gauge	**95193**
Exhaust filter monitoring switch	**971471210**
Low oil level switch, switch type (float valve eg)	**EK6542106 (rear plate) and 971458110 (E&H) or 71221992V (Schlemmer)**
Oil filter bypass standard and PFPE	**E6543592**
Oil filter bypass ATEX	**E6541596**
Oil filter	**E6537380**
Thermal switch 105 °C	**971463930**
Temperature sensor PT 100	**E6531771**
Oil drain valve G 3/4“	**71235740**
Roots combinations:	
RUVAC WA/WS(U) 501	**GK971463861**
RUVAC WA/WS(U) 1001	**GK971456541**
RUVAC WH 700	**GK971463861**



Pumping speed characteristics of the SOGEVAC SV 220 B at 50 Hz
(60 Hz curves at the end of the chapter)



Pump-down characteristics of a 300 l vessel
at 50 Hz

SOGEVAC SV 300 B and 320 B



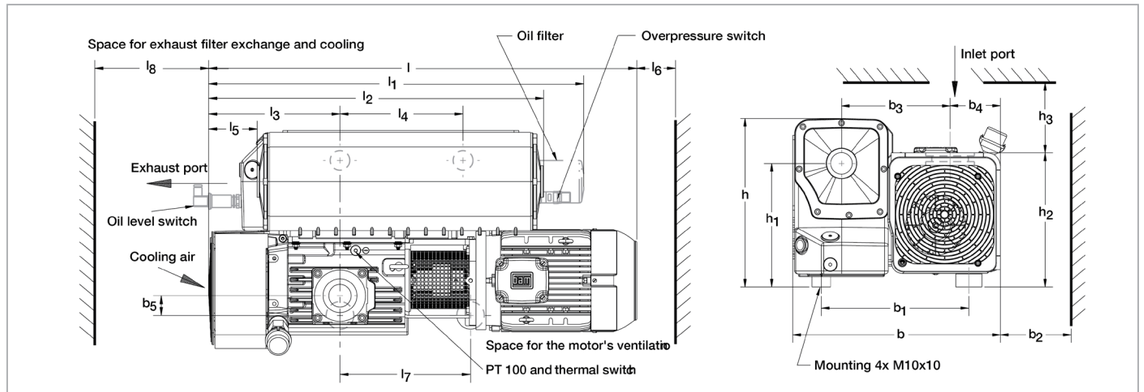
SOGEVAC SV 300 B / SV 320 B

Advantages to the User

- SV 320 B provides highest pumping speed on the market
- Lowest pump temperature on the market: ideal for harsh applications. Optimal oil life time thus reached
- Integrated exhaust filters with low oil mist flow: long filter life time
- Optimized integrated lubrication without external pipes: yellow metal free as standard
- Integrated oil recovery system and anti-suckback valve
- Low noise level
- High reliability due to separate greased ball bearings (30.000 h life)
- Variant concept
- Best ultimate pressure
- Big oil volume for long oil life time

Typical Applications

- Coating systems and load locks
- Oil purification
- Plastic and rubber injection presses
- Heat treatment / Metallurgy
- Lamination
- ATEX and O_2 applications
- and more ...



Type		l	l_1	l_2	l_3	l_4	l_5	l_6	l_7	l_8	b	b_1	b_2	b_3	b_4	b_5
SV 300 B	mm	1)	954	852	334	313	124	150	332	350	555	394	250	290	135	50
	in.	1)	37.56	33.54	13.15	12.32	4.88	5.91	13.07	13.78	21.85	15.51	9.84	11.42	5.31	1.97
SV 320 B	mm	1)	955	853	335	313	124	150	332	350	565	394	250	290	144,5	50
	in.	1)	37.50	33.58	13.19	12.32	4.88	5.91	13.07	13.78	22.24	15.51	9.84	11.42	5.69	1.97

Type		h	h_1	h_2	h_3
SV 300 B	mm	450	330	2)	250
	in.	17.72	12.99	2)	9.84
SV 320 B	mm	450	330	2)	250
	in.	17.72	12.99	2)	9.84

SV 300 B/SV 320 B		1)	2)
Europe	mm	1115	360
	in.	43.90	14.17
US	mm	1145	360
	in.	45.10	14.17
Japan	mm	1126	360
	in.	44.33	14.17
Wide Range	mm	1115	385
	in.	43.90	15.16

Dimensional drawing for the SOGEVAC SV 300 B/SV 320 B, European version